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FIRST AID
TO
MEDICAL TREATMENT



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First Aid

to

Medical Treatment.

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FIRST AID

TO

MEDICAL TREATMENT

OF

TAMILS AND SINGHALESE

FOR

THE USE OF

TEA AND RUBBER PLANTERS

AND

ESTATE DISPENSERS,

BY

R. J. DRUMMOND

M.D. EDIN., UNIV:

LINDULA

WALKER & GREIG,

1908

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PREFACE.

This book is not intended to be a "*know all*" "*wisdom-while you-wait*" "*Inside-complete-you-are*" "*Cyclopædia Medica*" nor is it intended to compete with or be a substitute for the D. M. O. and the Medical Service that the Government have inaugurated in Ceylon. But the book is issued to help the Superintendents of Tea and Rubber Estates and the resident estate Dispensers to recognize the early signs and symptoms of disease and to treat these with simple English and native medicines that can be easily kept in stock or grown on the estate. Every experienced Tea planter knows that a neglected 'cold' often leads to pneumonia and death; that a neglected diarrhœa often ends in dysentery and death; and that a neglected sore often ends in blood poisoning and death.

If these and other cases can be treated early, sickness is saved to the coolie and better out-turn of labour will be obtainable. At the end of the book a list of the English Drugs used for Treatment will be given, also a list of Indian or Ceylon Drugs, plants, roots &c., which can easily be stocked in the Estate Kaddie or Dispensary along with the other coolie requisites.

I have often been asked by the older planters in Ceylon to re-edit the late Dr. John Thwaites' book on "Treatment of Malabar Coolies" 1864, This I found on investigation was not feasible, so I have written this book and in doing so, must acknowledge my indebtedness to the former book and also to Dr. Waring's "Medical Plants of South India."

R.J.D.

March, 1908.

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FIRST AID TO MEDICAL TREATMENT.

Weights & Measures.

The question of weights and measures should be mastered as quickly as possible, if this book is to be made practical use of. The first point to remember is that all *solids* must be weighed in scales, and all *fluids* must be measured in a standard English measuring glass. For instance, it is quite wrong to take the English measuring glass for measuring fluids, look at the ounce mark therein, and then proceed to pour into it, up to that mark, some powdered quinine, and imagine you have then obtained an ounce of quinine. The following Tables must be learnt by heart and remembered:—

(A) Fluid Measure,

MINIM—DRAM—OUNCE.

1 Minim	=	1 drop (roughly) \mathfrak{m}
60 Minims	=	1 Fluid Dram \mathfrak{z}
8 Fluid Drams	=	1 Fluid Ounce \mathfrak{z}
20 Fluid Ounces	=	1 Pint
2 Pints	=	1 Quart
8 Pints or 4 Quarts	=	1 Gallon

(B) Solid Measure.

GRAIN—DRAM—OUNCE.

60 Grains	=	1 weight Dram \mathfrak{z}
8 weight Drams	=	1 weight Ounce \mathfrak{z}
16 weight Ounces	=	1 weight Pound

(Scruples are not used now, but each scruple equals 20 grs. so that 3 scruples equals one dram.)

The most accurate way to dispense is to buy the standard English dispensing scale and weights and the English medicinal measuring glass. The dram weight and the fluid dram on the glass are both marked with this sign \mathfrak{z} , like a large 3, and the ounce mark has an extra loop below the 3, thus: \mathfrak{z} . If the English scales cannot be got, one can get an accurate enough pair from the tattan, or native jeweller, and the following coins represent the following weights

Weights & Measures.

Two rupees and 50 cent piece	One ounce
One Ceylon or Indian rupee	3 Drams or 180 grains
One Ceylon 50 cent piece	1½ Drams or 90 grains
One 25 cent piece	45 Grains
One Ceylon 10 piece	20 Grains

Thus to weigh out one dram of a solid drug, put in your scales one 25 cent piece and one 10 cent piece.

This is quite accurate enough for ordinary purposes.

The common domestic measures may now be noted.

One drop=one minim roughly, but all poisons should be measured in a minim glass. Not dropped out of a bottle.

One tea spoon	1 fluid dram
One dessert spoon	2 fluid drams
One table spoon	½ fluid ounce
Two do do	one fluid ounce

For coolies who have no spoons. I have used their usual measure, namely one caddy egg shell=half an ounce. One English egg shell will measure from one to 2 ounces.

One wineglass measures from 1½ to 2 or 3 ounces and is a very fallacious measure; it is classically supposed to hold 2½ ounces or ⅓ part of the Imperial pint.

One tea cup holds	7 to 10 fluid ounces
One breakfast cup	from 12 to 16 fluid ounces
One small tumbler	½ pint
One large tumbler	one pint
One pilsener beer bottle	1⅓ to 1½ pints

And six of these go to one gallon in place of the imperial 4 which hold a quart and only exist in the imagination of the arithmeticians. Whisky bottles are all sold at 6 bottles to one gallon.

To dispense or make up a prescription, clean and dry your 6 ounce measure, put it on the table and then weigh out (solids on scale, and the fluids in the glass measure) the 1st, 2nd and 3rd items respectively of the prescription, put each into the empty 6 ounce measure, in turn, and then add water up to the 6 ounce mark, and stir till all is melted. The medicine is now ready; if 2 or 3 times the quantity of the mixture is required, you must multiply each and all ingredients by 2 or 3, as case may be according to the Drug Tables, and then add water to 12 or 18 ounces, in proper proportion. The dose is the same, and is not multiplied.



MALARIA.

History & Name. This disease is always present in Ceylon, and is known as Malaria Intermittent, Remittent, Jungle, Kurungala, Low-country Fever, and other local names. The cause of disease is due to human beings being bitten hypodermically by the female anopheles mosquito, who may thus inject one or more of 5 different parasites in her saliva; 2 of these parasites are mild, and 3 are malignant. Each parasite brings on fever in its own peculiar cycle; once every day: once every other day: or once every third day. If patient has 2 parasites in the blood, the cycles run concurrently; so the time and periodicity of fever has to be carefully noted. There are 4 stages of Malaria: Acute, Sub-acute, Chronic, and Chronic Suppressed Malaria.

Symptoms. In acute stage, the patient passes through the (a) COLD STAGE, where rigors or shiverings set in, wants to cover himself with blankets, vomiting may occur. Temperature is rising to 102 degrees, and he looks white, ill and pinched in face; in children, convulsions may occur. (b) HOT STAGE, face becomes flushed. Temperature rises to 103 or 104 degrees, pulse is rapid, intermittent, or full; blankets are thrown off, skin dry, and headache is intense, and vomiting may be repeated, and patient is in great distress. (c) SWEATING STAGE, here patient sweats freely and has to be changed, dried, and fresh clothes put on, all above symptoms pass off and patient feels shuck and weak, and can now eat and drink food. These are signs of Acute Malaria. In the Sub-acute, Chronic and Suppressed Malarial states, the stages *a*, *b* and *c*, may be slurred over, or absent in varying degrees, but if blood is examined under microscope, the parasite will be found in all these states for years after the 1st infection, if the original attack has not been treated or properly cured. The DANGERS AHEAD, during or after Acute Malaria are (a) Acute and Chronic Congestion of Liver; (b) Acute Mania, Delirium and death; (c) Heat Apoplexy; (d) Coma and death; (e) Dysenteric and Choleraic forms; (f) Black-

MALARIA.

water Fever (not found in Ceylon); (*g*) Pernicious Anæmia (Bloodlessness) and Enlarged Spleen; (*h*) Heart Diseases, Fatty Heart, &c.

Treatment A. During the first attack, in (*a*) the cold stage, cover the body well up, give one ounce of Infusion of Ginger in rice cunie or with lime juice, or barley water. The Infusion is made by breaking up one ounce of green or dry ginger in one pint of boiling water and letting it soak for one hour and then strain; place bags of hot sand or hot salt along spine and round legs and abdomen. During (*b*) hot stage, if phenacetin is handy, can give ten grains of it and repeat in 2 hours, and give lime juice and rice cunie and lots of tepid water to drink. During the (*c*) sweating stage, dry the patient, keep well clothed from chill and wet, and give whisky or arrack in $\frac{1}{2}$ to one wine glass doses in water, if pulse is weak or intermittent; and as soon as ears and hair of head are wet, the following draught of quinine can be given, if materials are at hand:—

Quinine Sulphate	1½ Drams
Orange or Lime Juice	2 Ounces
Aquam	up to 6 Ounces

Half an ounce, or a Caddy eggshellful in a cup of water at once, and repeat regularly every 6th hour for next five days.

After the fifth day, the quinine should be given twice a day in same doses for next ten days, and then put patient on to Liquor Arsenicalis (Fowler's solution), three drops in water after food thrice daily for a week. Then for one day give three doses of quinine and continue giving these doses of quinine every 7th day regularly for six weeks. The Arsenic must be stopped for a week after the 1st course, then begin 2nd course for another week: stop a week, and begin 3rd for a week. Then stop finally and watch the case. If there is anæmia or bloodlessness now give the following:—

Liq: Ferri Perchloridi	3 Drams
Liq: Strychninae	36 drops
Orange or Lime Juice	2 Ounces
Aquam	up to 6 Ounces

Half an ounce, or a Caddy eggshellful, in water thrice daily after meals, and give four bottles of this.

Treatment (Continued) B. During the sub-acute and chronic attacks, the fever will be present, but masked, and here the tongue will be dirty, mouth dirty and dry, and liver out of order, diarrhœa, etc. Here the patient must be given 5 grains of Calomel, wait half an hour and give the first dose of quinine, made up as before, along with a heaped tablespoonful of Epsom salts in half a pint of water. Then stop the Epsom if bowels are well opened; if not, give another dose along with a second dose of quinine, and continuo same quinine, arsenic, and iron as before. It is here to be noted, that if the tongue,

MALARIA.

stomach and liver are foul, and dirty, and mucous membranes are clogged up with mucus, it is no use giving any quinine in pills, tabloids or solid form; the efficacy of the quinine depends entirely on what is absorbed into the blood through the stomach, not on the quantity taken in bulk into the mouth, hence one must give aperients first. As regards the "Dangers Ahead" complications, the patient should be sent to hospital or if not possible, the same calomel and Epsom salts and quinine, by mouth should be persevered in; if vomiting occurs, quinine 15 grs. should be dissolved in whisky or arrack, or mixed with 3 ounces of rice cunzie or starch cunzie and passed by enema into lower gut, and repeat again in one hour. In the high fever (temperature 106 degrees and over,) cold baths must be given and quinine by mouth or lower gut, and whisky or arrack to keep up pulse. In the delirious and maniacal states, laudanum 15 drops should be given with each dose of quinine. In dysenteric states, give Epsom and calomel and laudanum 15 drops, and get bowels well cleared out. The great thing in malaria and all its complications is to get the quinine into the blood and it must be given between the attacks, so as to lessen the subsequent attacks and kill the parasites, otherwise no cure results.

Prevention. How can malaria be prevented? Messrs. Bamber & Green have made up an oil of kerosine citronella or lemon-grass, and coconut oil, which can be rubbed over the exposed parts of body. This has no nasty smell and is the best oil in the market for driving mosquitos away. Messrs. Cargill & Co. sell it, at rates suitable for coolies. The anopheles bite mostly after 4 p. m., right up to 8-30 next morning. They are identical in appearance to the "tiger" black-bar striped and grey winged mosquitos. They make no noise when biting. All pools and stagnant water round lines should have kerosine put in them regularly, thus: get a long bamboo pole, and make a fishing rod with string, fasten a long rag to the end of string, dip the rag in kerosine and "fly-fish" the water, dipping and pulling the rag through the water. This should be done once a week. All old bamboo stumps should be cut out and all pools of water near roads and in clearings should be filled up. Remember that a patient with malaria is a source of infection to his neighbours, as the anopheles bite him, get the parasites into their blood, breed the parasites and in turn bite healthy persons and inject them.

ENTERIC OR TYPHOID.

History and Name. It is always present among coolies especially in children and young adults. Tamils call it the "3 weeks fever" or the "dirty tongue fever." After the poison has entered the body, by drinking water or by tainted food, the incubation period is from 17 to 21 days, after that the **Symptoms** shew themselves. They are: (1) During 1st week, intense headache, constant during the 24 hours; fever, temperature low in morning say 99 degrees and at 4 p. m. to 8 p. m. raised to 101 degrees, then next morning 100 degrees and raised to 102 degrees; general pain in back, thighs, shins, feet, arms and hands; sometimes nose-bleeding, cheeks flushed, skin dry, no appetite, very thirsty. Tongue coated in centre and back, with white thick fur, tip and edges red, mouth dry, lips cracked, abdomen swollen and tender near navel and right groin over the appendix. Diarrhœa 3 to 8 stools a day of pea soup colour, offensive. (2) During 2nd week, all previous symptoms are present, in addition, the temperature is now continuously high, patient lies on back, unable to move, tongue gets worse, brown, dry and cracked in centre, mild delirium at night, abdomen larger and diarrhœa worse, pulse is frequent, small and feeble. During 3rd week, patient is worse, dull, and worn out, he lies without moving. Tongue is shrivelled up and dry, mouth and lips dry, pulse may be 100-120 or so, small and feeble; delirious and mentally stupid, patient drags on from day to day. Temperature begins to fall in morning and rise in evening. Stools and urine passed unconsciously, patient gets very thin. (4) During 4th week, patient slowly gets better. Temperature falls below the normal and rises in evening. Recovery is slow.

Dangers Ahead are septic pneumonia, bleeding from bowel, perforation of gut, peritonitis, acute mania and heart failure, phlebitis or inflammation of veins of leg.

Treatment. If case is suspected enteric, send for D. M. O. or send to hospital; meantime, diet the case as follows: boil 1 pint of milk and while boiling put in juice of 4 limes "taesekai" boil again for 5-10 minutes till curd forms, put milk through a clean muslin cloth and throw away the curd, give patient to drink of this lime juice and whey $3\frac{1}{2}$ pints in 24 hours, giving this in wine glassful doses at the even hours of the clock. For a drink and medicine, get $1\frac{1}{2}$ pints of clean water, drop into it 3 drops of pure liquid carbolic acid, and give $\frac{1}{3}$ of this tumbler to drink at each odd hour of the clock. Give also each night calomel 1 grain; and in morning at 6 a. m., one teaspoonful of castor oil. From time to time, barley water, rice cunzie or linseed tea can be given with the whey, also white of egg. Pulse must be watched and if feeble and small and rapid, whisky must be given in tablespoonful doses in the acid water, every 2 or 3 hours. The complications must be treated as they arise. In delirium, mania, and bleeding of gut, and perforation,

ENTERIC OR TYPHOID.

laudanum or chlorodyne 15 to 20 drops in water every 2, 3 or 4 hours. In heart failure, liquor strychnine 3 to 6 drops in water, every 2, 3 or 4 hours along with the alcohol. The great thing is to keep friends from giving solid food, and to get them to give plenty of drinking water (as above). Patient cannot be moved during the 3rd and 4th weeks, so if he has to be moved, it should be done early in the case.

Stools should be disinfected with Jayes fluid or quick lime. The urine also is infectious and should be treated in similar way.

CHOLERA.

Cholera is generally brought into Ceylon by new coolies from the coast. When it first appears it is usually diplomatically called "Choleraic Diarrhœa" It soon spreads and becomes an epidemic. The INCUBATION PERIOD is from 3 to 6 days, then follows a day or so of headache, ill health, depression and slight diarrhœa, then suddenly begins the (1) PURGING STAGE, here the stools are yellow, then watery, then like "rice water" odourless, and thin and the quantity of fluid ejected by bowel is enormous. Vomiting then begins; yellow at first, then like rice water and becomes incessant and abundant in volume. Patient gets painful cramps in limbs and abdomen; muscles stand out like knots all over body, intense thirst and gradually the (2) COLLAPSE STAGE comes in. Here the tissues of body are shrunk up. Fingers get like a washerwoman's hands, skin cold and shrivelled. Face pinched, eye-balls are sunken and cheeks hollow. Temperature under arm is 95 and pulse is small and rapid and imperceptible. Breathing is rapid and shallow, breath is cold, voice hollow and whispering. Urine stops being excreted. Patient gets restless, throws arms about, gets pain and burning in pit of stomach, intense thirst, mind is clear at first, then delirious, then gets stupid, then unconscious and death follows. This stage lasts from 2 to 24 hours, and if severely poisoned, the patient often dies about the 14th hour. If patient is to recover, then the (3) REACTION STAGE begins, pulse gets stronger; breathing is fuller and stronger, skin gets more natural, and less livid and shrunken, thirst, diarrhœa, restlessness subside, excretion of urine returns and stools contain bile. Temperature rises to 99 degrees, and patient falls into a deep sleep.

Treatment. In considering this one must remember that the disease is caused by a bacillus that gains entrance into the body by eating food or drinking water containing the bacillus; once it is in the body, nature tries to get rid of it by causing purging and vomiting, otherwise the virulent poisons generated by the bacillus in the gut would soon kill the patient by poisoning his blood and brain. Hence at the earliest stage, one must begin treatment by giving

CHOLERA.

half to one ounce of castor oil with 15 drops of chlorodyne or laudanum: wait half an hour and then give one grain calomel and three drops laudanum every quarter hour till ten such doses are given. Keep patient quiet and give repeated mouthfuls of cold water; if vomiting be present, it is no use to give solid food; give small quantity of milk, or rice cunzie, or dessert-spoonful of soup. A useful food and easily made up, is to take a pot of Liebig or "Lemco", melt it in a quart of boiling water, add half a bottle of brandy or whisky and give this mixture in caddy eggshellful doses every two hours. As the collapse stage approaches, one must give stimulants, and have beer bottles ready filled with hot water, and wrapped in cumblies and applied, 6 or 8, all round the body: or heat stones or bricks and wrap up in same way: or hot sand in bags, applied to the spine. Water and fluids must be given steadily by mouth, and as an internal stimulant, get an ounce of ground black pepper, an ounce of dried or green ginger, one quart boiling water, boil for half an hour, strain, and give one caddy eggshellful every half hour. Keep up the hot bottles, sand, etc, and put also large mustard plasters, made with mustard and cold water and spread on paper or linen, over the heart; if not available, put on hot flannels wrung out in boiling water and sprinkled with turpentine. An efficacious external stimulant is to get the "maussa" nettle, if obtainable, and whip the patient all over the back and abdomen well with it. This often brings the patient out of the collapse and comatose stage. A very good native cure, after giving the preliminary castor oil, calomel and opium, is to get some "omun" water and give it, along with the ginger and black pepper, as above. Omun water can be distilled in any country 'still' thus: take 3 lbs of the bruised seeds of the omun or ajowan plant (*Carum Ptychotis*) put in a muslin bag and suspend in the still, filled up with 6 quarts of water; distill over four quarts. The dose is the same as pepper and ginger mixture. A very useful remedy also is lemon grass oil, of which 5 to 6 drops should be given in sugar, every hour. In Straits and Malay Settlements, I see they use eucalyptus oil, in same dosage.

When the purging has continued too long, or is severe, a good pill to give if obtainable, is to get some lead acetate and opium pills and give one every half hour or hour till 8 only are taken. Each pill should contain 3 grains of lead acetate and of opium $\frac{1}{4}$ grain, but these should not be given unless under local medical advice; as an alternative, 15 drops of chlorodyne or laudanum can be given every 2nd hour. As to recovery or not, in any case, this really depends on the amount of poison bacilli in the gut: if the quantity is small, the case may get better, if large, and the patient has no vital strength to fight it out, then death will occur.

Preventive Treatment. When it is remembered that all the excretions of a patient are infections, it is of great importance that

CHOLERA.

the hands of any one touching a cholera patient, or his clothes, excretions, &c. should be thoroughly disinfected by washing in hot water and soap and then in a solution of Jeyes fluid, (Cyllin) disinfectant one teaspoonful to 1 pint of hot water. No food should be eaten in same room as cholera case, and no food should be eaten without washing hands and face first. At first sign on an estate of choleraic diarrhœa, or cholera generally first seen in coast coolies, the suspects should be isolated, and rough lines can be erected for them, of cadjan or manna grass, near fresh water, and these lines can be burnt after use. All seelis and clothes should be burnt and fresh ones given them; all chatties &c. should be either broken, or boiled, or soaked in solution of Jeyes fluid, strength $\frac{1}{2}$ pint or a chunduful of Jeyes fluid to a 4 gallon kerosine tin of boiling water. If the disease occurs in old lines, they should be either burnt, or freely washed with fresh lime or white wash and all floor dug up and fresh earth put on to floors. The floors in lines are often source of contagion, as dejections from patients soak in to and soil the ground. All woodwork should be well washed with Jeyes disinfectant, one chunduful to a kerosine tin full of boiling water, and this should be allowed to dry on the wood, and repeated again 3 days after. "Phenyl" a crude form of carbolic acid, can be used also in same proportion.

PLAGUE.

Bubonic plague luckily for Ceylon has never got a footing in the island, but a short description about its history, signs and treatment will not be amiss, as it may come here, sooner or later.

Cause of Disease. Plague is now known to be caused by a bacillus that is injected into man, by the flea of the rat. The flea acts as an intermediary host, same as mosquito does to the malarial parasite. The bacillus also can get into human body through any cuts on feet, hands, face, neck, &c. It may be eaten in food, or breathed in by lungs. When plague is coming to, or in a house, all rats escape and leave the house, or are found dead. The fleas on the rats are found to be full of the parasite, and they in turn bite man, cats, pigs, oxen, sheep, &c., who then get plague, in from 2 to 8 days after being bitten. INCUBATION PERIOD is then about 8 days

(a) STAGE OF INVASION FEVER. Initial symptoms are fever, blood-shot eyes, depression, staggering gait, weakness, eyes dilated, severe headache: facial expression of horror, temperature rising to 104 or 106 degrees, skin dry and hot, face bloated: eyes more blood-shot. Tongue is swollen with creamy coating, getting brown and black, lips dry, intense thirst, great prostration and weakness, delirium, stupor and comatose states then come on. Retention of urine, vomiting, pulse gets small, becomes frequent and intermittent.

PLAGUE.

(B) SECOND STAGE. Here, within 24 hours, and up to the 5th day, in the great majority of cases, the glands of the body become enlarged and buboes form. These come in groin, armpit, elbow, angle of jaw, and neck, and enlarge and suppurate and have to be cut and dressed as abscesses. Haemorrhage and bloody bruises are common, hence name 'Black Plague'. These come specially round the flea bites, and are found all over the body in patches from the size of a small seed to $\frac{1}{2}$ inch in diameter. Bleeding also occurs from lung, nose, mouth, stomach, bowel, and kidneys. From the cause of the disease, it can be easily seen that the bubos will form in the glands nearest to the site of infection; i. e. bites and wounds on feet, bubos in groin; bites and wounds on hand, bubos in armpit; infection of throat and tonsils, bubos in neck and jaw: lung infection, bubos in inside of chest, etc. etc.

It is to be specially noted that the hardest cases to diagnose as plague are not those cases where the bubos are present, but where plague is inside the body of patient in the lung, or some other deep internal organ. These special cases shew no outward bubos, but are like drunk men, they have high fever, marked depression, giddiness, constant hacking cough, staggering gait, incoherence, mild delirium, and a dazed, stupid expression.

(C) THIRD STAGE. Here the symptoms mentioned above become worse. Unconsciousness and coma come on: great and increasing prostration and weakness, heart failure and pulse gets weaker and weaker. Death often occurs between third and fifth days.

Convalescence, when it sets in, goes ahead rapidly, or in some cases is very slow, due to secondary blood-poisoning, and slow healing of bubos, etc.

Treatment (A). Prevention can be obtained by Haffkine's inoculation. This was, and should, be carried out in India thoroughly. If one is nursing a plague case, all wounds on hands and feet should be covered up with plaster. Hands washed with Jeyes' fluid, and no food eaten near the patient. Strict isolation should be carried out and all the excretions of patient, clothes, etc., should be disinfected with Phenyl or Jeyes' disinfectant, half pint or one chunduful to a kerosine tin of boiling water, and all the same precautions carried out as in cholera, which see.

Treatment of Symptoms (B). If case is seen early, give 5 grains of calomel and follow up with half ounce Epsom salts in half pint of water. Hot flannels, or mustard, to abdomen and pit of stomach. Bubos should be cut and opened freely. Liq. Strychninae in 3 to 6 drop doses with alcohol should be given freely every fourth hour and keep up this treatment. Opium, in 15 drop doses of laudanum should be given in delirium and sleeplessness, and repeated every 4 to 6 hours.

SMALL POX.

Small Pox was fairly common in Ceylon, but now less so owing to vaccination.

Symptoms. Incubation or hatching period is 12 days, then begins a series of signs. High fever to 104 degrees, shivering, pain in back, loins, and stomach, depression, nausea and vomiting. These signs continue till third day, when the eruption shews itself, then the high fever falls and the eruption runs a definite course. It appears earliest on the face and spreads all over the body in one crop.

1st day	The eruption is a red spot.
2nd "	It becomes hard.
3rd "	It feels like a bullet.
4th "	Still hard and like a bullet.
5th "	Still hard and like a bullet.
6th "	It forms a bladder.
7th "	Same, with red margin.
8th "	Same, with matter in it.
9th "	Full of matter and suppuration.

Here, the temperature rises again and forms the "Secondary Fever". This is due to blood-poisoning of the system and runs its course for eight or more days. The pustules run their course till third week when they dry up gradually and patient recovers. Infection lasts until all the crusts have fallen off, and isolation should be strict for 14 days after the death or recovery of the case. When a case is discovered, it should be as strictly isolated as possible, as in cholera, and after the epidemic is over the huts used should be burnt to the ground.

Small Pox occurs in 4 degrees of virulence: (1) in those who have been vaccinated. Here it runs a mild course; eruption is mild, runs a faster and milder course; secondary fever may be absent. There is no subsequent scarring and future is hopeful. (2) True Small Pox, but mild. (3) Where the pox marks run together in a mass. (4) Where you get haemorrhage in the pox marks. 2, 3, and 4 are all dangerous, especially the last two forms.

Dangers Ahead are, abscesses, erysipelas, ulceration and destruction of eyeball, pneumonia, blood-poisoning, and death.

Treatment. Here, the case should be isolated as soon as possible, and a hut should be built of grass and sticks and pounded mud floor; there should be only one door in it, and that not in the windward side: water for drinking, washing, and cooking purposes should be at hand. The attendants on the case should have been recently vaccinated, and no relations should be allowed near him. For medicines, make up the following:

SMALL POX.

Quinine Sulphate	...	6 grains
Epsom Salts	...	1 ounce
Lime Juice	...	2 ounces
Water	...	up to 6 ounces

Mix and give one caddy eggshellful 3 or 4 times a day.

Food, should be simple rice cungie and chicken broth, or raw egg-milk. If there be prostration and delirium, get some Liebig or Lemco. 1 pot melt in 1 quart of boiling water add half bottle of arrack, brandy or whisky, and mix and give one or two eggshellfuls every 2 or 3 hours during the day and night. When eruption is on, rub body well daily with margosa oil 10 parts and carbolic acid 1 part; or salad or coconut oil or linseed oil can be used. He can also be rubbed with chunam water and oil equal parts, or if none of these available, dust on the sores some rice-flour with a teaspoonful of boracic acid powder to 2 handfuls of rice flour. If there be delirium, blister the back of neck freely, and continue the quinine and epsom salts, and give it every 3rd hour, during the 24 hours. The natives use the margosa or nim bark tree for treating small pox. If the bark can be procured, get 2 ounces of the inner bark, boil it in 2 pints water for $\frac{3}{4}$ hour, strain, and give 2 eggshellfuls every 3 or 4 hours. Patient can drink freely of lime (teesakai) juice. The patient should bathe about 21st day and be strictly quarantined till then; all clothes and hut should be burnt after recovery. The only preventive treatment is vaccination. The native friends cannot be prevented in practice from coming near the diseased coolie, as they all have a belief that to get the disease, sent by the Goddess "Marei" is a method of acquiring merit and a remission of sins, and favour in her eyes. The branches and leaves of the margosa tree are sacred to their Goddess, and are hung round the door and bed of the patient and sprinkled on floor and the bed, and the oil is used to lubricate the skin, and given internally as above noted. There is no doubt it is a useful remedy.

Cowpox is best seen in human beings as a result of vaccination

3rd day	Eruption is red.
6th "	Eruption is bladder-like.
8th "	Eruption is inflamed and bladder-like.
10th "	Eruption contains pus or matter.
14th "	Scab forms hard and black.
21st "	Large scar remains.

It is to be noted that coolies who don't want to be vaccinated often rub chunam into the lymph. This destroys the vaccine. Coolies should be re-vaccinated every 4 to 7 years to be sure of inoculation from smallpox.

CHICKEN POX.

This must be distinguished from smallpox. The difference is briefly.—The incubation stage is variable. 1st Symptoms are indefinite, slight, and often negative. The eruption appears in 24 hours, and begins all over the body and comes out in a succession of crops. The eruption is reddish, hard and forms blobs with clear fluid in them, on 5th day they dry up, scabs are formed, and no subsequent scars remain. Disease lasts for 10 days. Treatment keep in line, and avoid chills and bathing at spout.

MEASLES.

This occurs in Ceylon at certain seasons in January, March, and in autumn, as a rule, but may occur at any time.

1st Signs are running at eyes and nose, swollen face; light hurts eyes. Cough and general depression. The eruption appears on 4th day especially on the forehead, round ears and neck, very bright, and raised to touch; feels velvety and ends up in bright red crescentic patches, and spreads all over body. Inside the mouth are seen numerous white ulcers or white spots on gums, and the inside of cheeks. Tongue is furred, throat sore, pain in chest and bronchitis. Look out for acute pneumonia, if case is neglected, and cold bathing is allowed too soon. The fever comes to end about 7th day. Here measles may be (*a*) simple (*b*) end up in bronchial pneumonia (*c*) or you get hæmorrhagic variety where you get bleeding from the eruption and from the mucous membranes of body. Dangers ahead are as above noted broncho-pneumonia, chronic inflammation of eye and ear (leading to deafness) and sometimes gangrene of mouth.

Treatment same as in smallpox; if mouth ulcers occur, wash mouth out frequently with weak Condy's fluid, and give brandy and Liebig mixture if lung symptoms occur; rub down skin with the various oils noted in smallpox, or dust on boracic acid and rice flour, keep patient if possible away from the bathing place, till 14 to 21st day. The skin-scales are infectious.

TETANUS OR LOCKJAW.

Tetanus or Lockjaw is common in east. There is generally a small wound or sore to be found and it is through this that the tetanus bacillus has found entrance. This bacillus is generally found in earth of gardens, stables, cattle sheds and in the dust of cart roads, &c. This disease must be distinguished from simple lockjaw due to a wisdom tooth erupting and (2) from stiff neck in rheumatism (3) from strychnine poisoning. In strychnine poisoning, the on-set is sudden, the legs are first involved, and between the spasms the muscles are flaccid and soft. While in tetanus, there is a

TETANUS OR LOCKJAW.

dirty wound or sore, either generally on feet or hands or face, elbows, knees. The muscles are never flaccid between the spasms, and the spasms begin first about neck and head.

Treatment. Look for a sore, and disinfect it thoroughly with pure carbolic acid, rubbed in, on a match. Then give 30 grains dose of bromide of potash in water, every 4 hours, and if you can get "gunja" or Indian hemp or hashish, in caddy, mix up 15 grains of the powdered leaves with a pipeful of tobacco, and let patient smoke it, as each spasm comes on—during 24 hours—keep patient quiet in the dark and feed between spasms as best you can. Send case to hospital if you can.

INTESTINAL WORMS.

(a) Tape worm or taenia is common in east.

Treatment. Here the great thing is to starve or lightly diet the case for 2 days, give no solid food, only rice cungie, or beef tea, then in early morning 5 a. m. give a dose of castor oil, wait $2\frac{1}{2}$ hours and then give a dose of the seeds of the "puisnekai" or (1) pumpkin. Take a heaped teaspoonful of them for a child, up to a heaped tablespoonful for an adult, break and bruise them up, keeping the juice carefully from flowing away, mix with sugar and teacup of milk, and give to patient. Then give second dose of castor oil $3\frac{1}{2}$ hours after. Look for head of worm, repeat this procedure on 3rd and 6th day and watch results. Another garden remedy is to take of dried bark of (2) pomegranate root 80 grains well pounded to a powder, also one teaspoonful of unripe juice of "papaw" papoi fruit mix and add teacupful milk, give fasting and repeat this dose once every hour till 3 doses are taken; give castor oil 3 hours after last dose. Another way to prepare is to take the *fresh* root-bark of pomegranate 2 ounces, water 2 pints boil to 1 pint and strain. Drink 2 ounces each hour till 4 doses are taken. Castor oil to follow as before.

(3) The seeds of *embelia ribes* (*Latin*) baberang (*Hindu*) are taken and bruised and mixed with sugar and milk and taken as above, one heaped teaspoonful for a child, one heaped tablespoonful for an adult. (4) Male fern oil is used also, but is only obtainable from European drug stores, and should only be given under a doctor's supervision, as it is a powerful drug.

Also for tapeworm, in lowcountry natives eat large quantities of fresh coconut. It must be picked ripe from the tree, and the white 'copra' chewed and swallowed steadily all day for 4 or 5 days. An acrid oil is exuded in the stomach and this kills and expels the worm. This remedy is much used by vederals.

INTESTINAL WORMS.

(b) **Round Worms.** Here (1) *santonin* is best remedy, give of it 3 grains to a child $2\frac{1}{2}$ years old, up to 5 grains to an adult; mix with sugar, and give castor oil afterwards as before. Here you must starve patient well first, if *santonin* not available, you can give the (2) pomegranate and papoi juice recipe just noted above. Sugar and milk can be given between the doses as a corrective. It is to be noted that in addition to the usual signs of worms, one often gets a form of spurious dysentery; patient passes blood and mucus, with pain near navel, but there is no fever and very little straining at stool. If these remedies are not available, you can often get in caddies a seed called *kattu-shiragam* (tamil) or *sanninasang* (singhalese) or *vernonia*. Take 2 teaspoonfuls of the seed, mix with equal parts of sugar or syrup, mix and give and repeat again in 2 hours and then give castor oil. These can be given to children as well as adults. Repeat treatment on 3rd, 6th, and 9th days.

(c) For **Thread Worms**, an enema is necessary. Here take 2 dessertspoonfuls of common table salt, melt in large tumbler of water and inject slowly into bowel. This must be repeated once a day for 10-14 days; as an enema "*infus: quassia*" is also used. Internally give 2 grains *calomel* every other night till 3 doses are given, and give a dessertspoonful of *Epsom salt* in $\frac{1}{2}$ pint water each morning after. *Santonin* may be tried here too by mouth, if they resist treatment.

(1) **Guinea Worm.** This worm is often found among coolies. To understand the treatment, one must know the life history of this parasite. The young guinea worms begin life in a 'water-flea' that lives in pools and stagnant water. The coolie drinks the fleas in his drinking water. The young guinea worm incubates in his stomach; and then works its way through the body to the cooly's leg. Here a small blister forms, then a boil and then an open sore; at bottom of sore, can be seen the guinea worm, who lays her eggs through this opening. Here the treatment is to leave her alone for 20 days, don't try to pull her out, as otherwise she will break and deep inflammation result. After 20 days, all her children have been born, and then she herself will emerge, then one can pour cold water on the sore and gently pull her out little by little and wind her up on a stick. If patient be near a doctor, a hypodermic of *Perchloride of Mercury* 1 in 1000, can be injected in and round the worm. She dies then in 36 hours.

ANCHYLOSTOMIASIS.

History and Name. This disease is endemic in India and Ceylon. It is commonly treated under the name of "Dropsy and Debility", and is spreading rapidly among tamil coolies in Ceylon. It is due to a leech or worm in the small gut. It is generally found in children, young boys and girls and women.

Symptoms. Early sign is constant pain and uneasiness in pit of stomach above the navel, a gnawing pain giving rise to habit of "earth eating" so common on estates; appetite is ravenous and capricious, diarrhœa of an irregular kind, black blood in stools sometimes. Then anæmia begins, eyelids are puffy, and cheeks swollen up, hands, arms, abdomen, legs, and ankles swell up, patient is breathless, and can't work; inside of eyelid is pale, not red as should be, of yellow-cheese colour and has black spots on it. Tongue is pale and flabby, gums and roof of mouth are pale and have black marks like a dog's mouth.

Treatment. (1) In Assam they treat as follows:—1st day take in from work and give a feed of rice at 4 p. m. and one ounce castor oil at 8 p. m. no food after the 4 p. m. feed.

2nd day 6 a. m. dose of Beta Naphthol gr. XX.
 „ 8 a. m. sago and salt.
 „ 10 a. m. Beta Naphthol gr. XX.
 „ 12 noon sago and salt.
 „ 2 p. m. Beta Naphthol gr. XX.
 „ 6 p. m. a feed of rice.
 „ 10 p. m. castor oil.

The best way to give the Beta Naphthol is in 5 grain pills, made up with extract of gentian or with a little powdered gum acacia. 4 pills are an adult dose; for a child one pill would be enough at a time; for a boy, two pills and so on according to age.

If this treatment is regularly carried out with all coolies looking even slightly anæmic once a month anchylostomiasis will, as has often been proved, be soon driven from Ceylon, for if the worms are regularly killed where are their eggs to come from?

It is well to give the Beta Naphthol treatment at least thrice in every case even if after the first treatment marked improvement is seen, as there may still be worms in his intestine.

The importance of regular inspections and getting the cases early is great, as it checks the increase of worms from the start and enormously reduces the number of eggs voided into the soil.

After this course of treatment, put patient on to good nourishing diet of good rice, soup and fresh milk and give as a tonic this recipe:

ANCHYLOSTOMIASIS.

Liquor Ferri perchloridi	...	2 drams
Liquor Strychninæ	...	30 drops
Infusion Digitalis	...	3 ounces
Aquam	...	up to six ounces

Half an ounce, or a caddy eggshellful in a cup of water, after the morning and evening meals.

(2) In Ceylon, thymol is given. This acts well, but following drugs must not be given along with, or after it: viz alcohol, ether, glycerine, turpentine or chloroform. As before, you must starve the patient the day previous, and give an aperient of castor oil. Then in early morning, mix with equal parts of sugar, 3 or 4 powders of thymol, each containing from 7 to 30 grains of thymol, and give the powders at intervals of 1 hour between them; 7 grains would be enough for a child, and 30 for an adult in each powder. Two hours after the last dose, give one ounce castor oil and after it has acted, feed the patient on sago and arrowroot or rice cunie. Repeat the thymol on the 3rd and 7th days as before, and then put them on to the iron and strychnine tonic above. Watch them and treat again with thymol at 14 to 21 day intervals, if no improvement meanwhile.

(3) Also in Ceylon, there is a method of giving eucalyptus oil and castor oil. Here, starve and give aperient as before, then in early morning mix 30 drops of eucalyptus oil, and spirits chloroform 30 drops into 12 drams of castor oil; shake well and give $\frac{1}{3}$ of the bottle, repeat $\frac{1}{3}$ in one hour and remaining $\frac{1}{3}$ one hour after. Then feed on sago &c. Repeat eucalyptus and castor oil on 3rd and 7th days and same again on 14th and 21st days. For a child, the dose must be reduced to 5 drops of eucalyptus oil to 6 drams of castor oil and give $\frac{1}{3}$ of this, every hour, as before. Then give iron and strychnine tonic as before. The eggs can be seen in the stools through a doctor's microscope. If a case occurs, the coolies in same line will get it from infection, due to eggs getting on to hands and food, and also through sores on feet. In the West Indies, the planters make the coolies step into a shallow tray of stockholm tar, and then into a tray of fine sand, this makes a temporary boot of tar and sand and keeps the eggs of parasite from getting into the sores and cracks found in feet of all natives. Thymol, beta naphthol and eucalyptus oil can be got from European dispensaries in Colombo, and from Walker & Greig, Badulla and Dickoya, and from Jordan & Co., Lindula.

VENEREAL DISEASES.

Three of these diseases will be described here.

(a) **Gonorrhœa.** The incubation period is from 4 to 7 days. The native remedy for this is a plant that grows in Galle at seaside called eth-neronchi (singhalese) or apai-nerunji (tamil). The whole

VENEREAL DISEASES.

plant is used as follows:—Dip the entire plant into a pint of cold water and shake it about for 10 minutes. Soon the water becomes glutinous and thick with a mucilage exuded from the plant. Remove the plant and hang it up to dry. Drink the pint of water, and repeat the emersion and shaking of plant in a fresh brue at mid-day and evening. When mucilage of plant is exhausted get a fresh plant. Drink barley water and rice cungie. If santal oil can be got locally, give 5 drops of this in infusion of ginger thrice daily. The santal oil can be commenced about the 14th day after the symptoms of pain and straining are over. If the cooly can be persuaded to inject locally, get a syringe and use a weak solution of Condyl's fluid and do this thrice daily. No arrack or any other alcohol must be taken, all smoking and strong tea or coffee must be strictly prohibited. Gonorrhœa in women can't be cured by giving remedies by mouth, and they should be treated by local treatment and for this, made to go to hospital.

(b) **Chancre.** The soft variety comes on about 10-14 days after infection. Dress it with dry powdered calomel and look out for **Bubos**, if these enlarge and suppurate, poultice with pusnekai or kollu with datura leaves, as a sedative; if the bubo becomes an abscess, it must be opened by a medical man.

(c) **Syphilis.** The sore here always appears 25-30 days after infection. Dress it also with calomel and watch out for rash and sore throat which come on always about 42 days after the date of infection. Here patient must take mercury; the following can be given:

Liq : Hydrarg Perchlor	...	1½ ounces
Aquam	...	up to 6 ounces

Half an ounce or a caddy eggshellful in water thrice daily, till gums are tender. This mercury should be given steadily for about 2 years but almost all natives make the mistake of stopping the medicine, as soon as they feel better and signs of it have disappeared, so the disease re-appears and is never really cured. These cases should be put under medical supervision, all smoking and drink must be strictly prohibited. The later signs of it must be treated in hospital or dispensary.

In those neglected cases of sores of both kinds generally seen in women, a cure can be effected by rubbing the sores well with a mixture of calomel and table salt equal parts. This should be done twice a week till signs of healing shew themselves but the patient at this stage seldom comes for treatment, and is hard to persuade to come under treatment.

DISEASES OF WOMEN.

Most of the diseases of women cannot be treated except in hospital, but there is one disease common among native women that should be taken notice of. It is acute inflammation of the womb, brought on by taking dangerous drugs to bring on the monthly period. Usually, the history is, when the truth can be got at, that the girl found that she had missed her period for reasons best known to herself, she consults not her mother, but the wise woman of the lines, the latter with much magic and incantation, procures a plant of the nettle family and doses the girl with this, till the friends get alarmed and tell the story. The girl is found to be in the following condition. Face cold and clammy with cold sweat, tongue and lips dry and cracked; eyes widely dilated, hair wet and disordered, breathing rapid and panting, pulse quick 100 or more, irregular and small, pain in most of the joints of body, pain especially in abdomen, below the naval and on each groin; whole abdomen tender and swollen up. History of slight discharge. Diarrhoea, of watery, smelly stools; sleepless and restless, off her food, and very thirsty, getting thinner, and legs drawn up in bed, to relieve pain in abdomen; as a rule the fact of taking the drug is denied at first. The thing is to get the girl away from the influence of the drug giver, or it will be given in secret. The best thing to do is to make arrangements to send her away from the place to hospital if possible, and meantime give her the following:

Epsom Salt	...	...	1 ounce
Quinine Sulphate	...	...	1 dram
Laudanum	...	...	2 drams
or			
Potass Bromide	...	...	2 drams
Lime juice	...	...	2 ounces
Aquam	...	...	up to 6 ounces

Half an ounce or caddy eggshellful in water, every 4 hours, and apply to abdomen any of the following native remedies as hot poultices, made and boiled on the premises and applied hot and repeated every 4 hours. (a) Datura leaves; take $\frac{1}{4}$ lb. weight of the fresh leaves, bruise them, with a little water into a pulp. Have some rice boiling hot and mix them together, and apply thickly to cover the whole abdomen: (b) or get a pusnekai or pumpkin, cut it up and boil it into a poultice and apply as such: (c) get some kollu or kana seed, break them up on a curry stone, grinding well, then boil till soft and apply as before; (d) or get some whole linseed seeds, grind also on curry stone, boil and add to it one wineglassful of linseed oil or coconut oil and apply. This disease drags on for a long time, and becomes chronic, with long misery and pain in after life, at the period: often the patient dies. The difficulty is to get the patient to stop taking the drug in secret, it is often continued thus, an addition to taking the medicines given to cure it. The

DISEASES OF WOMEN.

patient is fully convinced the "snake-devil" must be driven out and so the deception is carried on, till intense pain, misery and suffering carry them off.

Midwifery. In the East, as a rule, child-birth is a simple matter. But during Labour, there are 2 conditions that must be carefully distinguished, as the case will go wrong, if the proper treatment is not applied. What happens is this, the wise-women of the line come and say, the child can't be born and clamour for help; on enquiry one finds that the woman has been 10 or 15 hours in labour she has been subjected to all sorts of weird incantations, performances and ceremonies. She has been made to squat naked over a chatty full of charcoal with chillies and other charms thrown in and all kinds of oily messes rubbed over her abdomen, she may have been crucified to an upright post, with ropes round the armpits and arms tied up and pressure applied to abdomen, or she may have had cumblies or clothes tied round the belly and pulled tight round the spine, as is done to bullocks to make them lie down. On seeing her, one can notice she is tired to death, has had no sleep, no food, no water to drink, she is restless and tossing about. Pains have ceased, she is listless and apathetic. Now has to be decided what has to be done. The following differential table will explain matters, she is suffering either from (a) Exhaustion of womb or from (b) Spasm of womb.

(A) General Condition.

EXHAUSTION OF WOMB.

Expression Face placid: at most only fatigue not anxious.

Pulse not over 100.

Breathing not hurried, shallow or panting not more than 18 to 22 to minute.

SPASM OF WOMB.

Expression of face, tired and anxious. Tongue creamy yellow, brown, dry and tremulous. Lips dry &c., Pulse small and quick 120 or more, irregular and intermittent, Breathing rapid and up to 25—35 to minute.

(B) Abdominal Inspection.

To touch abdomen not tender; no tension of skin and feels soft all over.

Abdomen tender and she winces when pressed, skin tension increased and feels hard and immovable.

(C) Sexual Parts.

On enquiry will be told that

Parts are not swollen, red and tender.

Parts are greatly swollen, red and tender and dry.

(D) Treatment.

Give patient sleep and rest;
do not interfere.

Send for medical aid and
explain the symptoms in the
letter definitely.

Having noted these points you decide what to do. Give the patient if suffering from exhaustion of womb 40 drops of Laudanum at once some whisky and hot water and feed her, send all women out of room except one to tend to the patient and tell the friends to let her sleep, she will do so for a couple of hours and pains will probably begin again and labour will end normally. This condition is in measure due to meddlesome maltreatment of friends and relations. (1) In spasm of womb, send for medical aid and meantime give 20 drops Laudanum, apply hot bricks covered in cumblies round the woman and give stimulants and treat according to symptoms but see that medical aid is at hand, or woman will die.

After the child is born, sometimes the after-birth refuses to come away, one can be of help then in this way. (1) Do not tie the cord at once, but wait 5 or 10 minutes till pulse beating in cord has ceased, then tie 2 separate ligatures in cord and cut it between them. Then put woman on her back and you can feel with hand, near the navel a large lump like a pumallo orange. This lump is the womb; you must rub it gently but firmly and you will feel it getting hard, do this and wait for 20 minutes and then putting fingers of left hand pressed deeply into abdomen towards woman's spine, above the womb, grasp it so with thumb in front and squeeze down gently and firmly rub and squeeze and continue this till afterbirth comes out, still continue rubbing till womb is size of cricket ball, then put in binder. The next important trouble in midwifery is **puerperal fever** or blood-poisoning. This is exceedingly common in East, and is usually found to come on 3 or 4 days after child-birth—as follows—loss of appetite, sleeplessness, fatigue, hysteria, crying, &c., headache, pulse in morning is high, up to 100 or more, small and irregular and intermittent, temperature in morning not high 99 or so; in evening temperature is up to 101 or more, pulse not so high as in morning, abdomen tender, especially over womb and at each groin. Discharge is diminished in flow, and has nasty smell, diarrhoea as case goes on, the tongue gets yellow-brown, dirty and foul, lips are dry and cracked, eyes dilated, wild look in face, anxious expression, pain in legs, thighs and at back, in abdomen generally tender and swollen. In these cases, remedies by mouth are waste of time, medical aid must be got or patient will die or be a chronic invalid for life if she recovers. Local treatment of womb must be carried out to save the patient's life.

SKIN DISEASES.

(a) **Boils.** These are generally seen at certain seasons, and when present in great numbers, shew a want of tone in constitution; for this, a good tonic is to get the root of the iramusu (singhalese) or the nannari-ver, (tamil) hemidesmus or sarsaparilla. It grows best in low-country. You take of the fresh root bark, cut into small pieces, 2 ounces, boiling water 2 quarts. Boil down to 1 quart, strain and let it settle, to this you add, iodide of potassium 1 dram, shake well together and give a wineglassful night and morning for a month. If the boil is 'blind', a popular remedy is to put on equal parts of brown sugar and English yellow soap, rub well together and apply thickly round the boil, on a clean rag or lint. If there is a soft inflamed centre or core in the boil, a match sharpened to a point and dipped in Tr: Iodine and inserted in to the core, will cure it, then dress with above ointment, or boracic ointment. Pure carbolic acid can be inserted in same way. If the boil be softening and showing signs of suppuration, a small cut with lancet will relieve it, then squeeze out the core and the matter gently day by day and dress again with either of the above ointments. Keep these boils clean and washed well with hot solution Condyl's fluid, night and morning. If there is great pain round a boil, a hot application of datura leaves, 1 ounce by weight and boil in 1 pint of water and apply as hot as possible. tamils call datura, "umattai" singhlese "attana" and it grows round all coolly lines.

(b) **Carbuncles** are merely large boils that give rise to blood poisoning in the system. Give the same tonic as above and treat locally as follows: get some charcoal finely powdered and mix one part with 3 parts of hot boiling rice and apply as a poultice 3 or 4 times a day. If patient is in pain, give 20 drops laudanum at night and repeat in daytime if necessary. These carbuncles want cutting as a rule, so try and get medical aid for them.

(c) **Leprosy** (so-called.) Tamil coolies are often seen with white patches on the body, size of palm of hand or larger. These cases are benefitted by being rubbed with pure lime juice made fresh and applied 2 or 3 times a day.

(d) **Itch.** The ordinary itch of East is well known, appears first in hands, finger clefts and wrist &c. Get coolie to wash well in hot water and soap and mix up the following ointment.

Sulphur	$\frac{1}{2}$ ounce
Kerosine	2 drams
Coconut oil	4 ounces

and get this well rubbed in, and repeat daily for a week till better. Pure kerosine, can be used also and is excellent; if skin be tender mix the kerosine with equal part of linsced oil or sweet oil and persevere with treatment till cure results. Get clothes burnt.

SKIN DISEASES.

(e) **Dhobie Itch** is well known in Ceylon. For natives, get some goa powder 20 grains, coconut oil or vaseline 1 ounce and rub in night and morning. The sulphur and kerosine ointment above noted also good. If inflammation be spreading rapidly check it by painting parts with tinct iodine with a brush. If cassia alata can be obtained locally, (tamil) vendu koli, (singhalese) attora, get the fresh leaves, bruise them and mix with equal parts of lime juice and rub on twice daily.

(f) **Ringworm.** Here use the above cassia ointment or can rub in pure kerosine or paint with tinct iodine as above.

(g) **Lice or Crabs** can be killed with pure kerosine, but if in hair don't go near the fire.

(h) **Eczema.** Here best ointment is

Sulphur	1 dram
Jeye's Fluid	$\frac{1}{2}$ dram
Coconut Oil	up to 1 ounce.

rub thrice daily. For chronic eczema, a good remedy is "liquid fuel" petroleum 1 dram, yellow soap up to 1 ounce, rub in well night and morning.

(j) **Fleas** often cause lumps and irritation of skin. If present in house they can be driven out by washing floors, doors &c., with a hot infusion of blue gum eucalyptus leaves; gather them fresh, break up in bucket and pour on boiling water and let it infuse for half an hour, then wash floors with it and let it remain on all night. fleas can be kept from biting and crawling on the body by rubbing over feet and legs with Bamber and Green's kerosine and lemongrass oil. In caddies, one can buy a root called "vasambu" or flag root, which as a powder can be rubbed into dogs, cats and pets; it is the basis of Keating's powder.

(k) **Whitlow or (Poisoned Fingers)** are common among coolies; they must be poulticed with "pusnekai" or "kolloo" and rice poultices, with fresh datura leaves mixed in to relieve pain. They should not be left without proper treatment which is to cut them as soon as possible, so send to Hospital or Dispensary.

(l) **Leech Bites, Wasp Stings, Eyeflies.** (a) If one is going into a leech country, rub in Bamber and Green's oil of kerosine, citronella, &c. if this not obtainable use kerosine or lime juice. If one is bitten don't pull leeches off but rub on some lime juice or tobacco juice or salt and water or light a match and burn their tails, they then drop off without leaving their teeth in the wound: if the wound bleeds put on a postage stamp or a piece of plaster and keep it in its place for 10 days; if any inflammation occurs take off plaster and dip a match in Tr: Iodine and push it well into the bite and dress with boracic ointment. If an abscess occurs it must be cut and opened freely.

SKIN DISEASES.

(b) **Wasps and Bees.** Hornets and bambara bees sting here very badly. The usual platonic advice of the person not on the spot is to say "don't flap and so irritate these brutes, be calm." It is best to cover up one's head and face in jacket or dress and if stung badly, the stings must be extracted with tweezers and then lotions of bicarbonate of soda, or washing (kitchen) soda applied or Scrubb's ammonia; stimulants whisky, brandy, arrack in full doses should be given even to drunkenness as heart failure often occurs and death. 6 drops of liq: strychnine should be given too every 2 or 3 hours if at hand.

(c) **Eye-flies** can be warded off by Bamber & Green's oil, rubbed on beforehand or after being bitten will allay the pain: as also will a crystal of washing soda rubbed well over the ears and neck.

(d) **Mosquitos.** Here use Bamber and Green's oil. Among themselves the coolies use a native remedy called "tumba goeta" for all bites of insects and animals. The leaves are chewed up into a pulp mixed with equal parts of chunam, and applied direct to the wound, this reduces the swelling and pain.

(e) **Snake Bites.** If the snake be poisonous like cobra or tic the best thing to do, if at hand is to rub in the crystals of Condyl's fluid, or permanganate of potash, after first sucking the wound and cutting it down to the site of the poison. The crystals should be well rubbed into the cut, give brandy and stimulants, burning the wound with red hot needle is useful, but leaves a nasty wound afterwards. Natives tie a tight ligature round the limb above the bite.

(f) **Dog Bites.** These bites are usually of a dirty or septic nature, and the wound should be well rubbed with a match dipped in Tr. Iodine, or carbolic acid, and then dressed with boracic ointment. In Hydrophobia, if it comes on, there is no cure except going to a Pasteur institute to be inoculated. The wound at time of the bite should be cauterized as above.

ACCIDENTS.

(a) **Burns.** These usually occur in small children, and epileptics from falling into the cooking fires, and are seen sometimes in women and others, inflicted on them, as caste punishments for breaking caste laws and regulations.

Treatment. As an emergency, make up the following:

Carbolic Acid	...	3 Teaspoonfuls
Chunam Water	...	10 Ounces
Linsced or Coconut Oil	...	10 Ounces

ACCIDENTS.

Shake well and apply with a feather, then cover with fresh plantain leaf (kadali) and put upper surface of leaf next the wound; or you can apply following as powder:

Fresh Rice or Wheat Flour	4 parts
Boracic Acid	1 part

and spread thickly on the burn and dress with plantain leaf as before, then wool and a light bandage. If none of these remedies are at hand, make up a solution of bi-carbonate of soda 2 teaspoonfuls to a pint of water and apply it, and cover with clean rag or lint, wetted in this lotion, plantain leaf and wool and bandage. If burn is comfortable don't change for 24 hours, or unless matter exudes in excess from the burn. If an arm or leg is burnt, and nothing else can be done, the next best thing is to immerse the burnt part in cold water, in a basin, jug or kerosine tin, and keep it under the water till other remedies can be applied. Another remedy is to get some olive or coconut oil, and white of fresh egg mix together and apply and dress as before.

(b) **Sores.** The usual sores seen in coolies are due to cuts and scratches from tea bushes, on legs and shins, hands, knuckles, from tea pruning. Here best thing is to take scabs off first and rub them well with match dipped in tr. iodine or carbolic acid, and get them clean, then can dress with boracic ointment; or carbolic oil = carbolic acid 1 part to olive or linseed oil 20 parts, or if you can, get from Jordan & Co., Lindula, a preparation called 'Cyona' tincture; this has to be diluted down with 10 parts of water to one of the tincture, apply these on lint and plantain leaf and bandage. If the sore is of long standing and foul, with proud-flesh in it, make up a lotion of sulphate of copper 20 grains to 1 quart bottle of water and apply on lint, kept constantly wetted with this; and continue till the proud-flesh goes down.

(c) **Abscess.** Here there are signs of pain, throbbing, swelling and redness, if not ready for cutting; the abscess must be steadily poulticed with either pumpkin (pusnekai); or kollu, both, boiled down and mixed into a hot mash, and with a few fresh leaves of datura in them, to relieve pain. When ready, the abscess should be opened, this had better be done by D. M. O., or at hospital dispensary, then dress with Cyona tincture, or any of above remedies. If possible, the coolie should be made to wash these wounds, cuts, or sores, freely at the line "peeli" or spout and let the water pour over them for 5 minutes or so, night and morning, dry them and then dress again with the medicines.

(d) **Cuts and Bleeding Wounds.** (a) If the cut is simply a gaping wound in the skin, and not much bleeding, it can be pinched together by finger and thumb, and a strip of plaster put over it,

ACCIDENTS.

dress with boracic acid powder and dry lint and bandage. (b) If the cut be deeper and oozes black blood, the following may be done, get a clean sewing needle, scrape it well with sand paper or emery paper, and dip it wholly into pure carbolic acid and leave it there for 2 minutes; take a piece of clean linen or cotton thread and soak it also in the carbolic acid, dry them both with clean lint, thread the needle, and pinching up the lips of the wound pass the needle boldly through from side to side pull needle and thread through and tie a knot, of medium tightness, cut the thread, and make a 2nd stitch and a 3rd, till the wound is sewn up. Each stitch must have its own separate knot. Dress with Cyona tincture, or boracic powder and lint as before. (c) If the cut be deeper still and red blood is jerking out of it in spouts, try the following: get a large needle, at least 2 inches or more long, clean as above; and pinching up the skin of wound firmly, lift the skin up from the tissues under your finger and thumb and pass the needle through the skin and press it through till half shews on the other side, then leave it there, and taking the thread, previously disinfected, warp it tightly round the ends of the needle in figure of eight. This causes pressure and stops the bleeding. The needle and thread so warped are left in this position and a tiny piece of cork put on either sharp end of needle will prevent it pricking the patient. 1, 2, or 3 of these can be put in, if necessary, half an inch apart, and leave these needles in 48 hours, dress with Cyona or boracic powder, lint and bandage. (d) If the wound be deeper still, and a large artery is cut, then the only thing is pressure with thumbs and finger, above the wound to compress the artery, and then get a handkerchief or a piece of coir rope or cord and tying it tight round the limb where thumbs are; twist still tighter by putting a stick in it and twisting it round and then tie a second handkerchief round end of stick and again round the limb to keep stick in its place, put also a large ball of wool or lint into the wound and cover it with lint and tight bandage and send for medical aid or send patient to dispensary for further treatment.

FRACTURES.

Fractures. Among coolies working on estates this accident sometimes happens far away from the factory or bungalow in the fields of the estate; here the first thing to do is to put the patient in the easiest position possible and his feelings as to that should be consulted. *Don't* proceed at once to carry the coolie from the spot in a sack or cumblie as he gets humped up and the injured part gets jolted and injury to bone is increased. If the leg is broken place coolie gently on ground, scoop out a shallow trench in the ground and stretching the leg straight, put it in the trench and pack the

FRACTURES.

earth round it, then send to factory for (1) a charpoy or couch sofa, (2) some seeli-clothes or paddy straw bundles, or the straw covers to beer bottles if obtainable. The seeli cloth should be cut into pieces 12 inches wide and the length of leg from hip to toe and sewn up lengthways like a bolster or sausage; fill this with fine sand or earth and make two of them and sew up ends. These are laid lengthwise along the inner and outer sides of leg; and fasten round them and the leg, 6 separate pieces of rope, or bandage, each with its own knot. If seeli-cloth not available, you can pack leg in the straw bottle covers each one pushed into the other, to make a continuous line of straw. Here apply like the earth bag, or paddy straw bundles can be tied up and made likewise into a long splint. Then lift the patient on to the sofa, one person lifting the injured leg and rest lifting his body, and carry to hospital. If it is raining a manna grass hut can be put over him, or a temporary tent of cumblies. This treatment should be done if the skin over the fracture is not broken, but if the skin is broken and bone is protruding, the injured part should be first wrapped up carefully in fresh young plantain leaves, and then proceed as before. Here the danger is of letting earth touch the wound for fear of contamination from the tetanus germ. The guiding rule as to putting any splints on, is to make them long enough to extend beyond the joints on either side of the fracture, i.e., in fracture of shin or thigh, put splints from hip to ankle. In an arm fracture, straighten the arm gently and if possible put the arm close to the chest wall and put on one splint on outer side of arm of sand bag or straw and put on a handkerchief or seeli sling round neck and under the injured arm. In fractured ribs shewn by pain in breathing and pain in the chest take 2 putties and encircle them round the chest fairly and evenly tight from armpit to groins.

DISEASES OF STOMACH &c.

DYSPEPSIA.

(a) Dyspepsia or indigestion is fairly common among coolies, and is generally due to (1) bad rice, half cooked, or bad in quality, (2) arrack drinking (3) malaria. The symptoms are, constant headache, unable to work, palpitation of heart, with a 'fire' or burning in stomach, fulness in pit of stomach and over the liver, nausea, often irregular diarrhoea, alternating with constipation, tongue is white, brown and dirty, foul taste in mouth, pulse soft and quick, eyes yellowish, skin hot and dry.

Treatment. If there has been history of recent drinking, or eating bad food, give an emetic of mustard and water, or powdered ipecac. one teaspoonful in half pint of water, and then give the following powder :

DYSPEPSIA.

Quinine Sulphate	...	3 grains
Pulv. Rhubarb	...	10 grains
Soda Bi-carbonate	...	10 grains

make up 24 of these powders and give one, thrice daily after meals. The powder should be put on tongue and washed down with cold water. Patient can drink freely of lemon or orange juice and water as a drink. He should stop all hot fiery curries, and betel chewing, and live on rice cungie, eggs and milk, and fresh fruit and vegetables.

(b) **Congestion of Liver.** There are in addition to the above symptoms, the following signs: frequent stools during day, of a scalding, burning nature, yellow and foul smelling, or sometimes the stools are constipated and clay coloured. You give 5 grains calomel at once; and you add to the above powder of quinine rhubarb and soda, 5 grains of Dover's powder to each powder and give as before.

(c) **Flatulence and Colic.** The best native remedy is to get the dry ginger, or green if former is not procurable, weigh out one ounce of this, break it up and boil in 1 pint of water for one hour, strain and give 1 or 2 caddy eggshellfuls of this infusion, hot, every half hour or hour; $\frac{1}{2}$ teaspoonful of bi-carbonate of soda can be added to this, melted in $\frac{1}{2}$ pint hot water. In severe pain, 5 drops laudanum can be added to each dose.

(d) **Constipation.** For immediate effect, best remedy is castor oil, made up with liq. potassæ and lime juice, and give $\frac{1}{2}$ to one or two ounces as case requires. Epsom salts in one tablespoonful doses, repeated every 3 hours till 4 doses are given is also effective. Among plant remedies, the natives use for habitual use, the seeds of "kaladana" tamil "jiriki veru", the seeds are powdered small in a mortar and given with rocksalt and powdered ginger as follows:

Kaladana seeds	...	5 drams
Rocksalt	...	5 drams
Powdered Ginger	...	1 dram

rub well together and pound small in mortar or on curry stone, and after mixing, give 1 teaspoonful to 2 teaspoonfuls once or twice a day as required; dose to be reduced later on, as occasion requires. A very useful remedy for natives is sulphur. This can be given in teaspoonful doses in milk or mixed with sugar daily at dawn; this remedy can be given in safety to small children but in smaller doses from a saltspoonful to an eggspoonful.

DIARRHŒA.

Acute Diarrhœa in coolies is common and generally arises from (a) eating half boiled or bad rice, or from (b) eating putrid meat or fish or some other poisonous food (c) from exposure to cold and wet. The treatment is same in all cases namely: empty the stomach and bowel as quickly as possible and give the following emetic, if the patient be vomiting as well as having diarrhœa; if you have fresh pure ipecac powder mix a small teaspoonful in one pint of hot water and give at once; if not available, you can mix in a tablespoonful of mustard in one pint of hot water. If the fresh leaves of the Indian ipecac plant can be got nay-palai (tamil) bin-nuga (singhalese), you can use them powdered and dried and measure out 60 grains of them and infuse in $\frac{1}{2}$ pint hot water and give. After the emetic has acted: wait an hour, and give the following:—

Castor oil	...	1 ounce
Laudanum	...	10 drops
Liq. Potassæ	...	10 drops
Water	...	$\frac{1}{2}$ an ounce

shake well in an empty bottle and give for one dose; this dose can be repeated in 6 hours and then to act as a tonic and astringent give this powder.

Pulv: Ipecac Co.	...	8 grains
Pulv: Rhubarb	..	10 grains
Bi-carbonate of Soda	...	10 grains
Quinine Sulphate	...	5 grains

make up each powder to contain these amounts and give the powder at 8 a.m., 12 noon, 4 p.m. and 8 p.m. If there is any sign of a return of the diarrhœa, go back to the castor oil and laudanum and give 2, 3 or more doses of it and then after it has acted return to the ipecac and quinine powders, feed on rice cungie, arrowroot and milk and prohibit the eating of whole rice, or cold water bathing for 10 days or so. As an astringent in later stages of the disease, the natives use powdered cinnamon bark, about a teaspoonful mixed into a ball with syrup or jam, and give thrice daily. Another useful cure is to take the bark of margosa tree, dry and powder it and give one teaspoonful in syrup or jam 3 or 4 times a day, or a decoction of margosa bark can be made by boiling 2 ounces of the inner bark in 2 pints of water for half an hour, strain and give when cold, 2 eggshellfuls thrice daily. Bael fruit can also be used, as under dysentery, "Baccaline" a remedy sold in Colombo by C. Apothecaries Co., is also useful at this stage.

Chronic Diarrhœa. Merges into dysentery and will be treated under that heading and by the same method of treatment.

DYSENTERY.

Acute Dysentery is caused by eating or drinking bad food or water and is due to specific poisons that lodge in and irritate the large gut. It is brought on by same causes as diarrhœa and in addition in children one often sees dysentery caused by worms or poochies.

Symptoms. Headache, furred tongue, bad breath, fever, pulse quick and feeble, severe and constant pain in above and below the navel; constant stools often 24, 36, 48 in 24 hours straining and griping and passage of blood stained mucus, pure mucus and pure blood.

Treatment. Here again you must give aperients and none are better and safer than castor oil, Epsom salts or fresh powdered ipecac, the castor oil should be made up as follows :

Castor oil	..	one tablespoonful
Laudanum	..	10 drops
Liq. Potassæ	...	10 drops
Water	...	one ounce

give at once and repeat steadily every 4 hours till 3 doses are given or you can give the following : Epsom salts one tablespoonful melted in half a pint of water with squeeze of lime juice in it and give this dose at once and repeat it every three hours till 3 doses are taken, in a mild case, and 4 are taken in a severe case. The result of this Epsom salt treatment will be copious stools with a lessening of the pain in abdomen, less straining and griping and the stools will become yellow or watery and lose their blood and mucus gradually. After the 3 or 4 doses, wait half a day and give meantime 25 drops of laudanum or chlorodyne, now if the blood and mucus returns repeat the Epsom salt treatment as before and again watch stools and wait. Another useful salt to use is sulphate of soda in teaspoonful doses to be given in lime juice and water regularly every 4 hours till the blood and mucus stops. If these drugs are not obtainable you can use powdered ipecac; get it fresh if possible, and first given 15 drops of laudanum, wait half an hour and give 30 grains of ipecac powder, put hot mustard plaster on stomach and tell patient to drink no water for 3 hours; if vomiting occurs wait half an hour and repeat the powder. The ipecac can be given again 6 or 8 hours later and repeat daily at this interval of time and in same doses till pain, blood and mucus cease; calomel in 1 grain doses can be given also every half hour till 8 doses are taken. If ipecac from English dispensary is not obtainable, you can use the Indian drug called "tylophora" or nay-palai of tamils or bin-nuga of singhalese, this can be given as powdered leaves or powdered root and is to be taken in doses of 15 grains mixed with little rice cunie 3 or 4 times a day; 5 drops of laudanum can be given with each dose. This treatment is to be steadily carried out, so long as blood and mucus are passing and keep up these aperients to get rid of the poison which must be eliminated from the system, also keep a mustard plaster on

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abdomen and hot flannel fomentations and turpentine or hot water in beer bottles covered up in a cumblie, or hot stones or bricks also covered up. The treatment for the second stage of dysentery, that is after the fever blood and straining are relieved, is mainly that of astringent mixtures, and most of the so-called dysentery specific cures come under this heading, but are of no use and dangerous unless free purgation is carried out first, as above detailed. Of the astringent medicines, bael fruit or bele fruit is most useful. Here you boil the half ripe fruit for half an hour, break open and scrape out the inside, pass it through muslin and give with equal parts of milk and little sugar, 2 or 3 breakfast cups of this can be given in day. Another way to give bael fruit is to break it up, roast each piece in front of a hot fire and put the pieces in a jug, pour on boiling water to one quart and let it infuse like tea, strain and give wineglassfuls as a drink throughout day. Another native cure is to roast paddy on a hot fire till husks are brown and bursting, put teacupful of them in jug with boiling water, break up and infuse and strain and give in one wineglassful doses every 2 hours as a drink. Geranium roots contain tannin and can be chewed and juice swallowed, or 4 ounces of root can be boiled in 2 pints water and infused and strained and give also as a drink; cinnamon powder bark in teaspoonful doses mixed with syrup or jam can be given every 6 hours. In Straits Settlements a remedy of great repute is a decoction of mangosteen rinds, 4 ounces of them are boiled in 2 pints of water and strained and drink in wineglassful doses; pomegranate fruit rind is also good, here you take 2 ounces of the bruised rind and 2 teaspoonfuls of cinnamon bark to 1 pint water, boil for half an hour and strain, drink when cold 2 or 3 eggshellfuls every 4 or 5 hours; the seeds of pomegranate can be used also in same way. Mr. Green has been investigating a new plant called *Brucea Sumatrana* (simaruba) the plant grows near Peradeniya Junction and seeds can be got from the gardens there. It could easily be grown along roads and ravines and in coolie gardens, the seeds 10 to 12 are eaten each day till cure is effected. The bark and root also are used; one ounce by weight of the bark or root to be boiled in 3 pints water down to $1\frac{1}{2}$ pints and one eggshellful of the cold decoction taken thrice daily. The decoction must be boiled in an earthenware pot or chattie. Baccaline is useful also in this stage of desentery, but it should be kept at bungalow and not given into coolies' hands as it contains a large quantity of alcohol. In India for this stage of dysentery ispaghul seeds are greatly used, also in chronic diarrhoea, the seeds are taken whole mixed with little sugar. The dose is from 1 to 3 teaspoonfuls swallowed thus; no water must be taken with them, they absorb fluid from gut and give out mucilage which heals the inflamed surface. Margosa bark decoction as noted under diarrhoea also can be used. *Diet* must be rice cungle, milk, arrowroot and soups, and the brandy and Liebig mixture noted under cholera, and lots of stimulants should

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be given. In state of collapse $\frac{1}{2}$ a bottle of whisky or brandy can be given in the day, or more if pulse requires it. Prevent cold water bathing; this causes more relapses and deaths than anything else except perhaps the eating of whole rice too soon.

DISEASES OF LUNGS, &c.**INFLUENZA.**

Influenza is an infectious cold that it is very prevalent in Ceylon during N. E. monsoon and between the N. E. and S. W. monsoons. The symptoms are well known and usually the disease attacks the mucous membrane of nose and mouth, then may either spread to the lungs and cause bronchitis or pneumonia; or may spread down to the stomach, liver and gut and cause inflammation of these organs.

Treatment. If the case is seen early the best thing to do is to give the coolie a good dose of Epsom salts, Quinine and lime juice thus:

Epsom salts	...	one ounce
Quinine Sulphate	...	ten grains
Whisky	...	half ounce
Orange or Lime juice	...	one ounce
Water	...	up to half pint

mix the quinine, lime juice, and whisky in one wineglass; and the Epsom salts in half pint water, add the 2 together and give for one dose, then give the subsequent doses of quinine 5 or 10 grains in whisky and lime juice, night and morning and omit the Epsom salts. If there is much pain and aching in muscles and the drug is obtainable salicylate of soda will cure that, but it must be given separately and not along with quinine; it can be made up thus:

Salicylate of Soda	...	3 drams
Lime Juice	...	$1\frac{1}{2}$ ounces
Aquam	...	up to 6 ounces

one caddy eggshellful in water every 4 hours till aching is better, as a rule in 3 or 4 days the patient gets better but is weak after the fever, here whisky or arrack does good and can be given in suitable doses $\frac{1}{4}$ to $\frac{1}{2}$ a bottle in 24 hours. If the patient does not get better but shews signs of stomach being out of order, dirty tongue, no appetite, foul breath, sickness, nausea and constipation or diarrhœa give him 5 to 10 grains calomel at bed time and in morning after a heaped dessertspoonful of Epsom salts in $\frac{1}{2}$ pint of water at dawn. These drugs can be repeated for 3 or 4 days, then as a tonic Baccaline is good if obtainable. The patient may show signs of **Acute Bronchitis**, he complains of tight bands round his chest, breathing is oppressed and rapid: there is feeling of soreness and pain under breast bone and in ribs, cough is hard and racking, worst in early morning, expectoration is scanty and thick, and hard to get up, patient has

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fever; is worn out and sleepless, no appetite, rapid and weak pulse and general restlessness. **Treatment.** Here in Ceylon round most coolie lines you will find a plant called *adhatoda vasica*, it is grown as a hedge round gardens as the line goats refuse to eat it, hence its use as a hedge. This plant is a very useful one in all stages of bronchitis and pneumonia and a decoction of the leaves can be made on any estate: you take the mature leaf, dry it and weigh out 4 ounces of it to 1 pint of water and boil for half an hour and strain; the dose is 1 or 2 caddy eggshellfuls, 3 or 4 times a day. This decoction can be given in a mixture with other drugs and a suitable mixture for acute bronchitis with symptoms as above would be

Vin: Ipecac	...	2 drams
Vin: Antimonialis	...	2 drams
Bi-carbonate of Soda	...	2 drams
Liq: Ammoni acetat	...	1½ ounces
Decoction Adhatoda	...	up to 6 ounces

one caddy eggshellful in cup of water at 6 a.m., 10 a.m., 2 p.m. and 6 p.m., also you should give at bed time a powder containing calomel and Dovers powder 5 grains of each to be repeated for 4 nights only. The patient must be carefully watched and stimulants given with a free hand up to half a bottle of whisky in 24 hours. A very good way of giving stimulants in these cases is to get a pot of Lemco or Liebig melt it in a quart of boiling water or make an equal quantity of beef tea, add ½ or 1 bottle of whisky to this, and give the patient 1 or 2 caddy eggshellfuls every hour or 2 hours, keep patient warm and put on pumpkin or pusnekai poultices or linseed meal every 4 hours; and especially avoid cold bathing at the spout during convalescence. If the patient does not get better the danger ahead is **Acute Pneumonia**, here the signs are (a) pain, which is sharp and stabbing and aggravated by movements of chest and pressure and is accompanied by great oppression in breathing, (b) cough, which is frequent, short, hacking and restrained due to the pain, it is dry at first and then is accompanied by a thick ropy expectoration of an iron rust colour or tinged with blood and which gives no relief when thrown up and which is done with great difficulty and great distress. The pulse is quick from 80 to 120 feeble and small, skin is hot and dry, tongue foul, severe headache and blood-shot eyes and extreme restlessness as to body movements, patient sits up with his arms round his knees which are bent up and his head resting on them; his whole attitude is one of deep suffering and totally absorbed by his own trouble, he appears dull and can't be induced to answer questions, (c) rapidity of breathing, this is always present and should be watched carefully; the respirations are quick and shallow and panting, the number of inspirations per minute vary from 24 to 60 and the nostrils are opening and shutting markedly as in a horse that has been running rapidly, the fever is high up to 103° or 104°

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If a stethoscope be applied to the chest, the noise in the lung will be like a bellows blowing or the crackling sound of a distant fire on grass patnas. There is often delirium at night; loss of appetite and bowels are constipated.

Treatment. Here rest in bed or the floor is essential, patient must not be allowed to sit up suddenly or heart failure occurs. Hot poultices of pusnekai or linseed should be applied to lung every 4 hours, alternately on back and front of chest. If cough is short, dry and hacking give the ipecac and antimony adhatoda mixture, as in acute bronchitis. For a drink, he can take "linseed tea" which is made as follows, $\frac{1}{2}$ an ounce of linseed "*seeds*," not the meal, $\frac{1}{2}$ ounce sugar and a finger of ginger, and if available $\frac{1}{4}$ ounce liquorice root, boil in one pint of water for $\frac{1}{2}$ hour and then let it cool and strain: add lemon juice and give 1 or 2 eggshellfuls in cup hot water every alternate hour.

Food, should be cungie, arrowroot, rice cungie and barley water. The estate dispenser should be instructed to keep a strict record of the pulse and the frequency of the respirations; to count the latter, you place your hand on the chest, and count the number of times the chest *rises* (not falls) in one minute. This is a valuable guide to the prognosis or future result of the case, and it is to be remembered that the respiration rate is roughly 1 to 4 of the pulse per minute, thus 20 respirations correspond to 80 pulse rate. If a careful record of these be kept from day to day, along with the temperature, the planter can see how the case is going to turn out. Comparing respirations and temperature; thus (1) if the respiration rate increases rapidly in acute bronchitis, then pneumonia is probably commencing, even though temperature has not yet risen. (2) If during the illness the temperature falls, but respiration rate rises, it means a further extension of the disease. (3) A rise of temperature without a rise in respiration rate is due to other causes, and can be treated by a good dose of castor oil. (4) A rise in respiration rate, without a rise, or with a fall in temperature means heart failure and pending death. (5) The patient is not safe from death till the respiration rate has fallen, even though the temperature has been normal for 4 or 5 days previously. The treatment for this stage when heart failure is imminent is to give lots of whisky or arrack and make up the Lemco, or beef tea and whisky mixture and give it every other hour night and day and keep up the hot poultices, or hot stones or bricks wrapped in a cumblie, round the body, and make up the following mixture.

Liq. Ferri perchlor	...	3 drams
Liq. Strychninae (or Tr. Nux Vomica)		1 dram
Liq. Ammon Acetat	...	1½ ounces
Tr. Digitalis	...	2 drams
Decoet Adhatoda	..	up to six ounces

one or 2 eggshellfuls in cup hot water at 6 a.m., 10 a.m., 2 p.m.
6 p.m., 10 p.m. and 2 a.m.

BRONCHITIS.

Alcohol must be given freely even up to $\frac{1}{2}$, $\frac{3}{4}$, or whole bottle of whisky in 24 hours. The indication for alcohol is the pulse getting weak; "missing its beats" or becoming intermittent, great rapidity up to 100-120, 130 general delirium and stupor, and sudden rise of respiration rate. After convalescence, the coolie must not go bathing at spout. This causes more deaths than any other cause—in lung diseases.

Asthma. Is common among coolies, and the usual treatment is to get the leaves of *datura stramonium* which grows in most coolie lines, and the leaves of *adhatoda vasica*, dry them like tobacco, cut them up small, mix with $\frac{1}{3}$, $\frac{1}{2}$ or $\frac{1}{4}$ of tobacco leaves, and smoke in a pipe or hookah. This will relieve the symptoms. The patient must avoid red meat and soups and live on vegetarian diet.

Pleurisy. May be seen by itself, or may be a sign of commencing pneumonia. The sign of it is slight fever, with short sharp cough, and an acute stabbing pain in the chest wall with each breath. **Treatment** Get 2 putties and bandage them round the chest wall from arm-pits to waist—and fasten fairly tight to restrain but not restrict breathing, and give the following mixture.

Salicylate Soda	...	3 drams
Tr. Opii (Laudanum)	...	1 dram
Vin : Ipecac	...	1 dram
Vin : Antimonialis	..	1 dram
Water	...	up to 6 ounces

one eggshellful in cup water every 4 hours.

"Tea-Factory Cough." This is common among tea-factory coolies, working in the sifting room. They have a constant, hard cough, with yellow expectoration and are thin and bloodless. The cause of this cough is the 'fluff' from the tea leaf, getting in to the nose, throat and lung. The only cure is to send them out into field, to other work, and give them the following mixture

Vin : Ipecac	...	1 dram
Ammon Carbonate	...	1 dram
Ammon Chloride	..	2 drams
Liq : Ammon Acetat	..	1½ ounces
Decoct Adhatoda	..	up to six ounces

one eggshellful in cup of water every 4 hours.

DISEASES OF MUSCLES.

RHEUMATISM.

(a) **Acute Rheumatism** is fairly common among coolies, due to exposure to wet and cold and insufficient food, &c. In an acute case, with fever and swollen joints, wrap up each joint in wool and bandage, feed on skim milk, rice cungle and milk whey made with lime or 'teesakai' juice (4 limes to 1 pint of milk), boil milk and add the lime juice and strain away curd and give $\frac{1}{2}$ pint of this whey every 2 hours; any fruit and vegetables can be given, but no red meat or soup. For medicine, the following is useful.

Salicylate Soda	...	3 drams
Lime Juice	...	1 $\frac{1}{2}$ ounces
Water	..	up to 6 ounces

One eggshellful in cup of water every 4 hours. Keep patient from bathing in spout and cold water, and allow him to wear putties in wet weather.

(b) **Chronic Rheumatism** with enlarged joints and extreme pain at night or during day time, rendering work impossible, can only be treated among natives, by small doses of opium. This should be kept for them, in solid form; and a small dose size of a pea, served out to them daily, from the dispensary or bungalow. There is no permanent cure for this condition. In addition to this sulphur should be taken internally in syrup or milk, in teaspoonful doses, once or twice a day. For outward application, turpentine and lemon grass oil can be rubbed on; equal parts of margosa oil and camphorated oil are good, but rather smelly. "Liquid Fuel" is an excellent application for rubbing stiff joints with, and should be more used than it is, for this condition. Fish liver oil also is good, for external application, and can also be taken internally, in 1 to 2 teaspoonful doses in lime juice and gradually increase dose to 3 or 4 teaspoonfuls. It should be taken after meals, and if a pinch of common salt is put in mouth first the taste is disguised. Jordan & Co. sell the common cooly cod liver oil for same purpose, it is less nauseous and more refined. This cooly cod liver oil is excellent for all growing animals in Ceylon, puppies, cats, calves, &c. thrive on it; begin with a large teaspoonful in their rice or food and increase slowly to 2 or 3 teaspoonfuls, and continue its use till the puppies &c. are 2 years old. This makes bone and builds up the body and prevents the dogs from getting "leggy."

DISEASES OF EYE.

(a) **Injury to Eyelids.** *Bruising and swelling* of eyelids, may be reduced by putting piece of cloth, size of 2 rupees, wrung out in cold-water, over the shut eyelids and cover it with a piece of fresh plantain leaf; re-wet the cloth, every 2 or 3 hours. *Insect stings* cause much swelling, pull out the sting if possible with tweezers, and apply cloth as above wrung out in hot water. *Wounds* of eyelid may be washed clean with boracic lotion and apply a piece of plaster to bring edges together. Sewing these wounds should be done by a doctor.

(b) **Foreign Bodies in the eye.** (a) Cinders often get into eye while travelling in train. If the particle can be seen, it should be gently flicked out by a piece of blotting paper made into the shape of a pencil. If there is great pain, a solution of sugar one teaspoonful to 3 teaspoonfuls of water, dropped into eye will afford relief, or similar result will be obtained by putting in 2 or 3 drops of castor oil. (b) Lime (chunam) often gets into the eye. This should be neutralized by putting vinegar and water equal parts into the eye. The sugar solution above noted, also can be used, and then drop in the castor oil. (c) If an acid gets into eye. Bicarbonate of soda 10 grs. to the ounce, should be used to wash out the eye with. For sand, grit and dirt, and insects in eye, a small camel hair brush can be used to get out small particles from space between eye ball and eye lids.

(c) **Corneal Ulcers.** Are very common in cooly children suffering from debility. The ulcer always is seen as an opaque blur, like ground glass, on the clear part of the eye, and it has a small dot, or depression in the centre of the blur, which dot is the real ulcer. These cases take a long time to get better and should be treated by having finely powdered calomel blown on to the ulcers, through a tooth pick in same way as a boy uses a peashooter. This should be done at night. The ulcer also should be syringed thrice daily with boracic lotion, through a glass syringe and the nozzle of the syringe should have a piece of rubber tubing $\frac{1}{2}$ inch long fixed on to it, the kind used in baby's feeding bottles is best, this is soft, and won't injure the eye ball if the syringe accidentally touches it. The boracic lotion is made by mixing one dram of boracic acid with one tablespoonful of hot water, till thoroughly mixed, and then add water up to 6 ounces. The solution is ready for use, and one or 2 syringe-fuls can be gently squirted on to the eye ball, the eyelids being held open by the fingers. If possible, these eye cases should always be sent to hospital as they require skilled treatment and if neglected always result in blindness, partial or complete.

(d) **Ophthalmia or Conjunctivitis** is extremely common in Ceylon and is very infectious and spreads by using cloths, handkerchiefs, &c. used by the infected person. It may occur alone, or may precede or accompany a corneal ulcer, so look out for the latter

DISEASES OF EYE.

as well as former, when any eye disease is brought for your inspection. The symptoms of ophthalmia are pain in eye, patient cannot look at the light, white of eye-ball is red and blood shot, eyelids red and inflamed and pus or matter is constantly oozing out from eye lids and eye lids are stuck together with it, especially after sleeping. Ophthalmia is especially common in young babies and children and often occurs as a sequence from gonorrhœa.

Treatment. If there is ophthalmia, with no corneal ulcer, you can make up a solution of alum, 8 grs. to one ounce of water, and syringe the eye-ball regularly every 2 hours with this, using the glass syringe with rubber nozzle. If an experienced person can be trusted to do it, the eye-ball should be thrice daily brushed with a solution of nitrate of silver, 10 grains to one ounce of water, using a camel hair brush, and opening up the eye lids widely. Drugs like cocaine and atropine should not be used, unless by orders of a doctor and effects specially watched by him.

DISEASES OF EAR.

In Earache. The simplest remedy is to mix up equal parts of laudanum and olive, or other oil, heat it gently and pour into ear-hole, not too hot, and test it first in ear, before putting it in, and plug up ear-hole with little wool. If the pain in ear is due to a small boil and it can be seen, it should be pricked with a small knife and contents squeezed out.

(2) Solid wax in ear may occur in natives, but as a rule, they possess various spuds and spades on a chatelaine, that they use to prevent it collecting. This stoppage of wax is often due to the bad habit of pushing long screwed up ends of handkerchiefs into ear, this drives the wax farther into ear and impacts it. Treatment is to get an ear-syringe and syringe gently but steadily into the ear-hole, one large cupful of hot water with a teaspoonful of bicarbonate of soda dissolved in it

(3) Foreign bodies in ear; children often put beads &c. in ear. Here get an ear syringe, put $\frac{1}{2}$ inch of rubber tubing on the nozzle, and squirt water into the ear-hole, directing the stream of water along the top or roof of the ear passage. The water circles round the bead and projects it out; if it will not move, try and pass a loop of thin wire round and behind it.

DISEASES OF KIDNEYS &c.

DIABETES.

Diabetes is common among natives in Ceylon, especially clerks, Jaffna Tamils, Kanniaka pullais and Chetties. It is in them, due to nervous debility, nerve strain and perhaps to eating a too monotonous rice diet. The *symptoms* are, (1) gradual and increasing lassitude and weakness; loss in bodily strength, pains in back, loins and thighs, (2) appetite is often ravenous, (3) an excessive quantity of 'water' (urine) is passed daily, from 5 to 6 or even 10 pints in 24 hours: (4) intense thirst. (5) Skin is dry, harsh and irritable and must be scratched by the patient; boils and carbuncles are apt to form all over body. Ankles and legs swell up and get puffy. (6) Tongue is red and dry, and "skinned" looking. Teeth are apt to decay, gums recede and bleed easily and mouth is painful to touch, and taste of all hot things is distressing. Emaciation is very marked, and steadily gets worse, as case goes on. (8) Palpitation of heart is present, also breathlessness; digestion is upset, bowels are constipated and flatulent. Brain is dull and patient has no moral courage or resolution to do anything. Eyesight is bad and cataract often grows later on. If a patient shews these symptoms the urine should be tested by a doctor, and if sugar is found in it, the case must be treated by the doctor, or the patient will go from bad to worse. As to the finding of sugar in urine, there are two kinds of diabetes, (1) a dangerous kind where not only sugar, but a chemical excretion called "acetones" is found. (2) A less dangerous kind, where sugar only is found; this latter is associated principally with liver trouble, and is easily put right by giving liver medicines and regulating the diet. Diabetes in natives often runs on for years, and with care and attention to diet, these cases live for a long time, but often the case goes rapidly down hill and death occurs from pneumonia, pleurisy or brain complications, like coma.

Treatment. Here the diet question is one of great difficulty, as rice is one of the staple diets of a native, and should be stopped, but in practice this cannot be done. All sugar, and all starchy foods like bread, rice, sago, tapioca, potatoes, beans, peas, should be stopped. The diet actually given should be selected from the following: milk, skimmed, can be taken in any quantity up to 8 pints a day, also fresh "butter-milk" in same amount; butter, cheese, eggs, meat, chicken, fish, and green vegetables and a reasonable amount of fruit if ripe, but not 'green' unripe fruit. Plantains may be given, but if they produce a sugar reaction in urine, should be stopped. Bread, if it must be eaten, should be toasted, thin, dry and crisp, and never eaten fresh or new—all the 'dhal' or 'parripu' class of lentils should be prohibited from the diet. If patient will stand it, without shewing sugar in urine, rice cungie may be allowed later on. Water as a drink should not be prohibited, and can be taken with bicarbonate of soda one eggspoonful in it to one pint of water. (2) The medicines

DIABETES.

to be given are, (a) keep bowels well open with simple aperients like Epsom salts or castor oil, (b) to help the liver, give a blue pill once a week, and also thrice daily give an eggspoonful of ammonium chloride in a wine glass of milk, after food. These 'liver' diabetes cases generally have a gouty history and gout in liver is the cause of the diabetic condition. Here one can give salicylate of soda 20 grains in water, thrice daily and keep up the action of this, till sugar disappears from the urine. The formula would be

Salicylate of soda	...	4 drams.
Tr: Aurantii	...	3 drams.
Aquam	...	up to 6 ounces

one eggshellful in cup water thrice daily after eating. (c) In the dangerous form of diabetes, the only drug of practical use is opium, and it should be given in $\frac{1}{2}$ grain doses, thrice daily, under medical supervision. Codeina, a form of opium is given also, but too expensive in cost for most natives to buy.

DISEASES OF KIDNEY.

Acute Congestion of Kidney, or acute Bright's disease, is generally in Ceylon due to exposure to rain and cold. *Symptoms* are fever and hot dry skin, thirst, loss of appetite, constipation, and pain over the loins and kidneys, and feeling of chilliness or shivering, headache, and sometimes vomiting. The urine passed is scanty, thick, dark and deposits a copious sand or sediment on cooling. If a coolie shews these signs, and also dropsy, which begins with eye lids getting puffy and ankles getting swollen, then the urine should be sent to a doctor and examined for albumen: if this is found, the diagnosis is established. It is to be noted, that dropsy alone does not constitute Bright's disease, as coolies often get dropsical in the later stages of anchylostomiasis and in heart disease. **Treatment** keep coolie at rest in his line, with warm cumblies over him: apply hot fomentations to loins, or hot bricks or bottles; keep bowels open with Epsom salts and given him 3 to 4 pints of liquid to drink in 24 hours, either as water, or skimmed milk, or fresh butter-milk or pure milk, rice cungie and barley water. For medicines, he should be given the following.

Acetat of potash	...	3 drams
Tr: Digitalis	...	3 drams
Orange juice	...	1 ounce
Water	..	up to six ounces

one eggshellful in cup water every 4 hours during day. It is best to stick to a vegetable and milk and egg diet and allow no soup, Liebig or red meat, and as a rule, no alcohol is required; after 10 to 14 days the case gets better.

In Chronic Bright's Disease, the future is not so favourable, this form of kidney trouble ends as a rule in death, and is seen late

DISEASES OF KIDNEYS.

in life, and is due to irregular living, frequent exposure to wet and cold, chronic intemperance, especially of spirits, arrack, gin, and cheap whisky. The symptoms come on gradually and insidiously, and are (1) a steady and gradual failure in bodily strength, frequent passing of water at night, anaemia; ankles are swollen up at 6 p.m. after days work, and in morning eyelids are swollen and puffy; there is also shortness of breath, dryness of skin, indigestion, headache, giddiness, blindness. The urine should be tested by a doctor for albumen and the other abnormal products found in this condition, and he will find disease of the heart and the bloodvessels which will confirm the diagnosis. The patient in later stages gets very thin, and emaciated, skin hangs in loose tags all over his body and bags of loose skin are seen where fat and plumpness existed before. He gets a pot-belly and arms and legs get thinner and waste away.

Treatment. There is very little to be done for these cases; the body must be kept warm, avoid exposure to cold and wet. Feed on rice cungie, skim milk, butter-milk, barley water; alcohol is not to be given. For medicine give the following.

Tr: Ferri perchlor	...	2 drams
Liq: Strychninae	...	1 dram
Orange juice	...	one ounce
Water	...	up to 6 ounces

one eggshellful in cup water thrice daily after food. Give also, if there is much dropsy, Epsom salts, in half ounce doses of the salt, melted in $\frac{1}{2}$ pint of water in early morning or if compound powder of jalap is obtainable, give it in 30 grain doses, once a day, till the dropsy goes down.

STONE IN KIDNEY.

The symptoms of this disease are sudden and characteristic, the pain is severe and darting and begins in loins over the kidneys and runs down the thighs and back, or comes to front, and down the groin and lower abdomen, with faintness, nausea and vomiting, and general collapse, cold sweats and shivering, and frequent attempts to pass water. Treatment during the pain is to put patient in hot water, or apply hot cloth to loin and abdomen and give Tr; opii or laudanum in 15 drop doses in hot whisky and water every hour till pain ceases. $\frac{1}{2}$ grain of opium pill can be given also, but does not act so quickly as laudanum. Between and after the attacks, patient should be put on the following.

Acetat of potash	...	3 drams
Citrate of potash	...	3 drams
Orange juice	...	one ounce
Water	...	up to 6 ounces

STONE IN KIDNEY.

one eggshellful in cup water at 6 a.m., 10 a.m., 2 p.m. and 6 p.m. and as to diet, avoid red meat and soups, and feed on rice and fruit and vegetables.

Inflammation of Bladder, or Cystitis, is due to exposure to cold, and wet as a rule. The symptoms are severe, and constant pain in lower abdomen, frequent passing of water, and pain at same time; water passed is thick and cloudy. Fever and shivering are present also, no appetite and general feeling of ill health.

Treatment. Put patient on to barley water, and rice cungle to drink, lime juice or orange juice drinks. If the Et-naranchi plant can be got, give this freely as described under venereal disease, also you can give the following.

Laudanum	...	2 drams
Tr : Hyoscyami	...	3 drams
Water	...	up to 6 ounces

one eggshellful in cup of water, every 4 hours.

DISEASES OF HEART.

Heart disease is common among natives, and is found especially among the up-country coolies where hills have to be continually climbed, and especially among horse-keepers and rickshaw coolies and those who habitually carry heavy loads. A true diagnosis of heart disease cannot be made except by a doctor, but the outward signs in a coolie, would be when he complained of severe pain over the heart, radiating to breast bone or up to collar bone, and down the arm, palpitation in the heart, and hearing the blood rushing in his ears; heart's action is intermittent and stops and then thumps, breathing is hurried and painful, face is anxious and shews signs of pain; if the work he is doing is persisted in, he falls down unconscious, and goes into a dead faint. On examining him, you see the heart pulsating under the skin, pulse is small and irregular and intermittent in character, i.e. every now and then a beat of the pulse is missed out; hands and feet are cold, skin is cold and sweaty. Here treatment lies in keeping patient quite quiet, head on ground, and apply hot cloths, or bottles to the heart, give arrack or whisky and 15 drops laudanum and repeat every hour or 2 hours, till he gets right. The after treatment of these cases is rather difficult to carry out. The coolie should be seen by a doctor and an exact diagnosis made of the heart's condition. If the heart is badly damaged, very little can be done, he should not be given any hill chimbing to do, or weight carrying but could do easy work, in field, or take on a watchman's billet. If the pain during the attacks is severe and attacks are very frequent, the best thing is to give him a small allowance of opium and give him a regular kanack of it each week, but not in bulk. Tincture of foxglove is a useful heart tonic and regulator, but it

DISEASES OF HEART.

must be given under a doctor's supervision and guidance. When the valves of heart are leaking and diseased, sooner or later the heart breaks down and gets dilated, and the patient shews signs of dropsy in ankles and legs and then abdomen and then he is unable to work and becomes a permanent invalid. For dropsy, you can give repeated doses of Epsom salts in $\frac{1}{2}$ ounce doses in $\frac{1}{2}$ pint of water, night and morning, or even thrice daily or compound jalap powder in 30 grain doses can be given, once a day, and tincture of foxglove must be given as above. These cases must be treated as different symptoms arise, but little can be done to really cure them in the long run.

DISEASES OF BRAIN.

The majority of diseases of brain are beyond the scope and intention of this book. **Epilepsy** or fits being fairly common among coolies will here be considered. The epileptic fit is often seen and is ascribed to the devil or pissassi. The common symptoms are, (1) the patient stops working, and all voluntary acts are suspended, patient calls out, and falls down unconscious, muscles begin to twitch and clawing movements of limbs begin, breathing is hard and short, and distressing, face is distorted and twisted, pupil of eye is contracted, mouth is shut and tongue is often bitten, saliva trickles from month, and urine is often discharged involuntarily. The attack often lasts 5 or 6 minutes. Patient then sleeps and wakes up dazed and quite unaware of what has happened. If the fits are often repeated and become chronic, the memory gets defective and mind is dull, patient loses his self control and becomes impish, or idiotic in his doings and character. The treatment during a fit is to lay patient on his left side, and don't pull against or try and stop the movement of legs and arms, but hold the limbs gently and keep him from injuring himself. If mouth is shut on the tongue, open the teeth gently with the handle of a spoon, and keep the spoon there, to prevent the teeth closing again. After he comes to life again, leave him alone and let him sleep it off, with some one near him to watch that he does not get up and go away, and do harm, as at this stage, consciousness is not perfect and patient often does rash things unknown to his better nature. After and between the attacks, Bromide of potash in 20 grains doses should be given thus.

Bromide of potash	...	4 drams
Orange juice	...	one ounce
Water	...	up to 6 ounces

One eggshellful in cup of water at 6 a.m. 10 a.m. 2 and 6 p.m. and give "coolie" Cod-Liver Oil in eggshellful doses with or after food, thrice daily.

The native treatment for Epilepsy is to make the patient crawl on hands and knees, through a series of thorny arches, that scratch

DISEASES OF BRAIN.

and scarify the skin, and be beaten well and thoroughly with the branches of the oleander nerium plant which is grown by coolies for the purpose. I do not know if the patient has to drink also a decoction of the oleander, it may be so. It is a dangerous poison and in large doses, stops the heart's action, and kills the patient and perhaps this was a merciful way of getting rid of bad chronic cases of Devil possession. It is a very interesting fact, that this oleander nerium plant is the same family botanically, as the Strophanthus plant that is used in Soudan and Uganda as a witch craft medicine in trial by ordeal; there, the victim was made to drink a decoction of the seeds and if he recovered, the Devil was driven out of him; if he died, the punishment was just and diagnosis was confirmed. Strophanthus also killed by stopping the heart's action. Thus Africa and India both used similar drugs for magic and witchcraft purposes, anyhow the "pusathi" gets his fee first, so it is all right either way! If the epileptic attack returned as it generally did, the treatment was not at fault, but the victim had a double dose of original sin, and the ceremonial was repeated with increased gusto and an extra fee exacted. I have seen friends of the epileptic treading on the patient during a fit to keep the Devil in order. This should be stopped at once, as a cruel thing, as the internal organs are often damaged by so doing.

MEDICO-LEGAL.

Medico-Legal matters in Ceylon, an Oriental country, must be looked at from two stand points (1) The English Legal one of occidental laws, super-imposed on (2) the Oriental caste laws and religion of an ancient race of Indian origin. It may be safely stated that in Ceylon 75% of the crimes and "illegal" acts according to English Law are never detected, according to our present regime of law court and police procedure. If a crime is reported, it is not reported from any high ethical standard of seeing wrong righted, or from an abstract sense of justice, but generally from motives of spite or to get "even with" the accused person. The real people in Ceylon who administer justice are the heads of the various castes and the priests; those decisions of theirs are binding on the laity or caste people, and all ceremonial and ritual attending Birth, Marriage, and Death, and punishment for the various caste wrong doings and misdemeanours are carried out by them quite ignoring the merits or demerits of English law. If a child is baptized, or goes through the Confirmation, or Ordeal of Fellowship to manhood, then that child is *ipso facto* baptized or confirmed; if a child is ill and the caste tribunal decides the child has a devil in it or has been bewitched, then the child is subjected to exorcism by the priest and if the operation is unsuccessful, then the child is quietly got out of the way, and no one is the wiser, and no one tells, as caste law remains supreme. *Infanticide* is a very common crime in Ceylon and among the Tamils, I think the question is one of caste, and (2) largely an economic one; if the estate proprietors encourage the breeding of children by giving a small cash bonus to the mother for each child she kept alive, year by year, there would be plenty of pluckers in 8 to 10 years time. The present system gives a mother no encouragement, as she cannot suckle and rear a family and be out plucking leaf all day long, and if she stays in her lines to look after the infants, the kangany sees she is earning no money and she has to get rid of the child. This is done, by giving it paddy to eat with the outer husk on it, or starving it, or putting a wet silk cloth over its nose and mouth or by drugging it with opium or inserting pins into the soft part of its skull.

A child who has been drugged, is generally given opium by the giver rubbing opium on the finger and child sucks it off. The symptoms are—(a) heavy sleep; the child if roused, dozes off again immediately, the breathing is irregular and at times hardly noticeable (b) Child on waking has no appetite (c) pupils of eyes are small and contracted. (d) Face is drawn, thin and pinched looking. (e) Child gets gradually thinner, feeble and generally wastes away. Older children than infants are often killed by being given (1) chopped up hair in their food (2) broken up and pounded glass (3) or the fine flint hairs inside the sheaths of giant bamboo. These produce constant pain in stomach and abdomen after eating; and signs of peritonitis and colic, vomiting of blood and blood in stool, and

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general wasting away and gradual death ; if chopped hair has been given it often collects like a ball in the upper stomach, near the liver, or low down in right groin—death always occurs sooner or later and the method of killing is not detected till after death.

These mechanical irritants are often given to adults also, as for instance, a woman who is jealous often breaks up her glass bangles on the curry-stone and mixes with the glass other vegetable poisons, according to the colour of the glass, viz. white glass and arsenic are mixed together ; blue-glass and sulphate of copper and green Arsenic with green glass ; these poisons are often given as ‘ Love potions ’ to the opposite sex ; and are hawked about the country by wandering Fakirs and “ Mundrum ” priests and given to all and sundry who solicit their Black Magic to remove a European master, or an unfaithful husband or a scolding shrew of a wife. These same Fakirs constantly give advice about poisoning or ‘ removing gently ’ persons who are undesirable. In Ceylon, the 3 principal poisons used are (1) *Arsenic*, (2) *Opium*, (3) *Datura*, and more rarely (4) *Oleander* and (5) *Gloriosa Superba*. These will be now described, as to signs, symptoms and treatment.

(1.) **Arsenic.** This can be bought in any bazaar up-country or Colombo in unlimited quantity, and being white and like sugar in appearance and taste can be easily put into tea, coffee, cocoa, puddings, sweets and bread. The fatal dose is about 3 grains ; this smallness of dose often saves the patient, as the poisoner like the cook has a “ heavy hand with the sugar ” and puts in so much that immediate vomiting occurs, and the whole of stomach contents are rejected. Arsenic on an empty stomach would act in about half an hour, but if given with or after a heavy meal, the symptoms might not appear till 12 to 18 hours after. The signs of (A) *acute poisoning* are as follows :—

Burning pain in stomach, nausea, vomiting of bile, brown matter, blood and mucus. Feeling of faintness, and utter prostration, then purging with straining and stools contain blood and mucus. Skin cold and clammy ; pulse feeble and intermittent and small. Severe cramp in legs, loins and back and thighs. Dryness of throat and intense thirst. Patient has feeling of impending death and the whole symptoms may be classed as similar to ptomaine poisoning from eating putrid meat, fish, lobster, prawns, crabs &c., or similar to a stage in Cholera. **Treatment,** if stomach pump is handy it should be used ; if not, then give a table-spoonful of mustard in a pint of hot water as an emetic ; let this act, and then give the following mixture ; take 3 ounces of tinct : of perchloride of iron and one table-spoonful of bicarbonate of soda, melted in $\frac{1}{2}$ pint of water ; mix the two medicines together and a brown mixture results, which should be filtered through a piece of muslin or linen : of what has passed through, give a tea-spoonful in wine-glass of hot water every $\frac{1}{4}$ hour

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till 8 to 10 doses are taken. If Dialysed Iron is at hand, it should be given, in table-spoonful doses in hot water, in same way. As an aperient, castor oil, is best to give, either alone or mixed with olive-oil. For a drink, one can give white of egg and barley water, linseed tea and rice cunzie. Apply hot bottles and bricks to hands and feet and a linseed poultice to the abdomen and if patient is in great pain, 15 drops of Laudanum, by mouth, in hot water.

(B) **Chronic Poisoning** by arsenic is shewn by—Loss of appetite, feeling of weight in stomach and general tender abdominal sensation; redness of eyes; eye-lids puffy and swollen up; skin dry and scratchy. Pains like rheumatism, in arms, legs and joints; sleeplessness and sometimes nausea, and vomiting, diarrhœa; great loss of flesh and progressive emaciation and general debility. **Treatment.** Get patient away from the house and surroundings and give iron tonics and castor-oil aperients as above.

Opium poisoning has been already described in infants; in adults the *signs* are (1) the patient is excited as if drunk with alcohol, rapid pulse, restlessness and mental exhilaration, then comes (2) the stage of drowsiness, head-ache, weariness, giddiness, insensibility, relaxation of muscles and pupils of the eyes are contracted to pin points, slow soft pulse, clammy skin and laboured breathing and patient can be kept awake with some difficulty. (3) Then he gets more and more insensible, eyes are shut and he does not respond to touch and handling, lower jaw falls and he looks as if he was dying, and all the above bad signs increase and pulse gets feeble and fails, breathing stops gradually and death ensues.

Treatment, if Opium has been taken by mouth, get patient to be sick and give emetic of mustard and water as before noted, or 30 grains of Ipecac powder can be given; after the patient has vomited, make up some Condry's Fluid solution, with permanganate of potash crystals and hot water, the strength of same to be such that you can see objects through the solution, and give this in $\frac{1}{2}$ pint doses by mouth every $\frac{1}{4}$ hour till 8 to 10 doses are given. (2) Keep patient roused, and walk him about if possible; give hot coffee by mouth or as an enema, pour cold water over his head and slap his face and hands and body with a wet towel. Apply sal volatile to his nose. If it can be got quickly, a hypodermic injection of atropine $\frac{1}{2}$ of a grain, should be given and keep up the treatment as long as life lasts, if no atropine is at hand, you can give 30 drops of Tr: of Belladonna in water and repeat again in $\frac{1}{4}$ hour and again if necessary in $\frac{1}{2}$ hour.

(3) **Datura** (Tamil Umattai) is often given to a victim in order that robbery or rape may be committed. The symptoms are dryness of mouth and throat, and difficulty in swallowing, pupils are dilated, and patient sees double, eye-balls are prominent and project and white of eye is congested and red, patient is delirious

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and mutters to himself and continually sews with an imaginary needle and thread as he sees a spiders' web and double lines in the air; the drowsiness gets worse and unconsciousness comes on, legs are paralysed, pulse is rapid and feeble, and breathing is irregular; skin is dry and may have a red rash on it; face is often flushed and sometimes pale. Sometimes, during the 1st stage, patient is wildly excited, laughs loudly and tries to run away from danger and assaults his own friends and acute mania shews itself, but this does not always occur.

There may also be in later stages, along with stupor, a paralysis and looseness of lower bowel; as the stupor passes off and patient recovers, there is often a 2nd period of delirium, and then the brain clears up and patient regains his senses.

Treatment. Get stomach emptied as soon as possible, with an emetic of one table-spoonful of mustard in 1 pint of hot water; or 20 grains of Ipecac powder in water. Then give stimulants as alcohol, coffee, and rub mustard on calves of legs, hot bottles to the feet and flick with wet towel on face and body and rouse up the patient and give Laudanum 15 drops in water every hour till 3 doses are given.

(4) **Oleander or Nerium.** Alari (Tamil) grows in most gardens in Ceylon. The twigs are used to beat women when in epileptic fits, to drive out the devil. If a twig or leaf is bruised and mixed with food, the symptoms are those of (1) irritation of stomach and gut and (2) heart-failure. The first signs are thirst, vomiting, pain in stomach, diarrhoea, insensibility, then (2) giddiness and pain and oppression over heart, pulse gets slow and falls to 30 per minute, intermittent and weak; respiration slow and sighing. and patient gets signs of tetanus or lock jaw all over body; death may occur suddenly from patient sitting up suddenly or trying to walk, due to heart-failure. Pupils of eyes are also dilated, and skin is also cold, and later on, convulsions may occur, and end in unconsciousness and death.

Treatment. Use emetics as in previous case and give strong black tea or coffee and alcohol and if Tr. Aconite is at hand, give 10 drops of it in hot water and repeat in $\frac{1}{2}$ hour and again in one hour and see if pulse improves under its action. Patient must be kept lying down strictly and not allowed to sit or get up on any account. Mustard plasters and hot cloths to be applied over the heart.

(5) **The Yellow Oleander.** *Cerbera Thevetia* is used by natives to poison cattle, either for spite or revenge. The seeds are used and are generally put in the food. Symptoms similar to those of nerium oleander.

(6) **Gloriosa Superba** or Lantern Lily. Here the powdered root, stalk and leaves are used. The symptoms are similar to those

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of nerium oleander, as retching, vomiting, diarrhœa, spasms like tetanus or lock jaw. Pulse 35 per minute, cold skin, collapse, pupils dilated, heart-failure—stomach tender and painful, death may occur in 3 or 4 hours.

Treatment. Similar to that of oleander nerium.

(7) **Cannabis Indica.** Bhang or Ganja, Hashhish of Egypt. Bhang is made of dried leaves. Ganja is made from flowers. In India 'Charas' is the resin exuded from the leaves and branches and "Majoon" is a sweet meat containing this drug and also dhatura, usually given to girls and young children. The *symptoms* are (1) stage of excitement and apparent drunkenness, patient becomes wildly excited, laughs and sings; has blood-shot eyes and dilated pupils, dry throat, burning in stomach, talks incoherently and continuously crying and howling; pulse full and strong and from 60 to 75 per minute. Then begins (2) stage of unconsciousness, where you get tingling all over skin, numbness, giddiness, loss of muscular power and stupor getting slowly worse and passing into death. The state of "*Running Amok*" is due to this drug, patient is first of all morose and depressed, and gets suddenly very angry, rushes out into street, seizes hold of any weapon and attacks all and sundry and especially women, assaults friend and foe alike and is quite off his head and unconsciousness of doing the things he does, and in his homicidal rage, every living thing is assaulted without rhyme or reason. Ganja smoking, if it becomes a habit, causes mental weakness and imbecility, melancholia, trembling and tottering gait and muscular loss of power, loss of appetite and wasting away.

Treatment of this poison is use emetics as before and give lots of lime juice or orange juice, blister nape of neck with mustard or blistering fluid, slap patient with a cold wet towel and give alcohol and strychnine, latter in 3 or 4 drops of Tr. nuc vomica in water and repeat every hour for 3 doses.

(8) "**Marking Nut**" Tree or *Anacardium semecarpus* (Tamil) Shenkottai. The juice is used to produce the appearance of a bruise on the skin, in false cases of assault. A stronger decoction of the juice will produce intense inflammation and blistering and is used by natives as torture for infidelity in women; the whole body or certain parts being rubbed with the juice and it causes intense pain, with bright red eruption of skin and blistering on 3rd day.

The nut is used for marking linen, hence the name. The nuts themselves have been inserted into the human body for infidelity, and caused death. Even sleeping under the tree causes irritation of skin, eyes, mouth; and face swells up and limbs get enlarged and tender.

(9) **The Cashew Nut.** *Anacardium orientale* is dangerous too,

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if the outer shell is not pulled off the nut before roasting and it often causes irritation of face and hands while being roasted.

The Caste Punishments among coolies vary in severity and degree, from mild boycotting to death. The boycotting carried out, is similar to that occurring in other well known countries and consists of such acts as (*a*) preventing the outcaste from drawing water from the well (*b*) forbidding him from getting rice and food from the village caddie (*c*) putting the house under a curse, so that none enters it (*d*) the outcaste girls get no husbands or the sons get no wives (*e*) the children born are refused baptism; the marriage rite is refused and the death ritual is refused also (*f*) the punishment for infidelity is often a severe branding with a red-hot knife over the cheeks or other parts of body or the nose is cut off, or the marking nut is used as above stated (*g*) if the out-caste offends the priests by wishing to change his religion or break caste or refuses to pay the temple money dues, then poison is administered, like arsenic and death occurs, or sometimes opium is administered and severe thrashing is given and on waking up, the patient is told the devil has been possessing him and hence his pain and bodily discomfort. (*h*) The ultimate punishment is death. This is brought about by poison in food; or by giving an opiate and then (*i*) beating them to death or (2) a still commoner way is to suffocate the victim, by placing a wet silk cloth over the mouth, or (3) by making a **U** shaped loop of silk cloth, hung from the ceiling; the victim is then held by 4 people, one at each arm and leg, and the head is placed in the bottom of the **U** of cloth, with the face downwards and the weight of body is gradually allowed to press the neck into the **U** of the sling, the 4 people gradually cease to hold up the body and as the victim is insensible from the opiate, the unconsciousness deepens and death ensues. Then the body is released from that position and placed in that of apparent hanging by 'suicide.' The "spoof drama" is carefully staged and all details are so arranged to deceive the coroner or magistrate, and all witnesses tell a story already concocted and as often as not, a verdict of suicide by hanging is brought in; and so the case is one more added to the long list of undetected crime in Ceylon.

Each caste kills its victims according to the caste ritual of that caste alone *i. e.* (1) some kill by beating with sticks on special parts of body (2) some kill by stabbing and cutting (3) by poison or by the strangulation above noted, but by examining the method of death and knowing the caste ritual of same, one can tell the caste that committed the deed, and hence may detect the real criminals. It is hopeless expecting witnesses to come forward and tell the truth, as they will only get served the same way if they do tell, as they are all under the priest or "head" of the caste. It is to be noted that a caste does not as a rule kill by using the method or ritual of another caste just as the ritual of robbery, carried out by the Karowars of South

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India can always be detected from a common robbery, as they cut only certain parts of body, and take as a rule, jewellery from the neck, face and ears of women ; the ear lobe being cut or torn off in the process.

In the ritual or sacrificial murders of the East, where the victims (generally young girls) are annually killed to propitiate "Kali," they are generally done to death by strangulation. These murders occur generally in February and March and April, and the Fakirs who come into Ceylon in January are usually at the bottom of those sacrificial murders and they should not allowed into the country.

These Fakirs are the curse of the East and they carry about poisons and go to different Bungalows and work 'Mundrums' among the servants or distribute poison to be put in masters' food and always make mischief and levy 'black mail' on the coolies and kanganies in the lines and if money is not forth-coming, then the 'evil eye' will be let loose and much disease and sickness will result.

The "Karowar" or thief caste coolies always come to Ceylon in December and January and usually rob women plucking in out-lying fields or the weeding women ; also children with lots of jewellery are common victims. The proceeds of the robbery are carefully dedicated to their goddess, so that the robbery is really a sacrificial offering, in same way as the Thug offered his strangulated victim to "Kali" as a propitiation for the remission of the sins of the caste and a white-washing for the misdeeds of the past year. The Karowar caste can easily be detected by his caste marks and dress, and should not be allowed into Ceylon by the Government.

R. J. DRUMMOND.



DISINFECTANTS AND ANTISEPTICS.

The following article by Dr. E. T. Wilson, Medical Officer of Health, England, is worth perusing and keeping for future reference in case of any epidemic among coolies.

Fresh Air. The best and cheapest. To be got by open windows or a fire.

Hot Water. Drinking water is disinfected by boiling. Infected linen should be plunged in *boiling* water for 10 minutes.

(A) Carbolic Acid. Poison. Phenyl. Solution of Calvert's No. 2. 1 in 40 of water for sponging the skin followed by washing; for soaking soiled linen (one-hour); for basin to spit in, or for wetting a sheet to hang in room or doorway. Solution 1 in 20 of water for night stool, w. c., sinks, etc., and for washing floors, walls, or furniture.

Carbolic Toilet Soap.—For the hands, furniture, or floor.

McDougall's Powder.—A combination of sulphite of magnesia and tar acid.

(B) Chloride of Lime. Must be kept dry. 1 lb. to a gallon of water for utensils, sinks, w. c., drains, etc. 1 oz. to a gallon of water for linen, which must not be left long in the solution before being wrung out in fresh water as it is corrosive; 2 ozs. to a gallon of water for washing furniture, etc., but it is apt to leave dampness.

(C) Permanganate of Potash (Condy's Fluid). A wineglassful in a gallon of water for washing the hands and utensils; also for baths or use in spray. *When the pink colour is lost the fluid is inert.*

Solution of *Permanganate of Lime.*—20 drops in a wineglassful of water forms a pleasant mouth-wash and cleansing gargle.

N.B.—Neither is poisonous when diluted.

(D). Dry Earth.

(E) Quicklime, as Limewash, not white-lime, for walls and ceilings.

(F) Crude Jeyes Fluid (Cyllin) 1 in 80 of water.

HOW TO USE THEM.

The letters refer to the preceding Paragraphs where the necessary directions will be found,—their order denotes the Author's preference.

For basin to spit into. A.

To receive dirty rags, etc., until they can be burned. A.

For gargling, washing baths, etc., and personal use. C.

To disinfect the hands. A, F, Carbolic toilet soap.

For impure or suspected water or milk. Boil thoroughly.

For freshening air in occupied rooms. Fresh air by open window or fire. C, F.

For utensil or bedpan. A, B or F. to be added on each occasion before using.

For infected linen. Soak at once in A, or F, before sending to wash, or immerse in boiling water for ten minutes.

For washing furniture, floors, etc. A, or F, Soap and water freely.

Lime-wash ceiling. Admit fresh air freely.

For a decomposing body. Charcoal, A. (1 in 20,) or F.

For offensive drains, ditches, cesspools, etc., Use A, or F. or B.

In the INFECTED ROOM nothing can replace Fresh Air, Light, and Cleanliness. Scents are worse than useless.

Remove all furniture, cloths, and anything that may harbour dust, dirt, or infection. Set everything in order and clean up.

If the room is not isolated hang a sheet before the door outside and keep well wetted, 3 or 4 times daily, with A. or F.

Disinfect and remove as soon as possible all discharges from the body of the sick.

Keep at hand a tub or pan with A or F for receiving soiled linen.

Disinfectants are poisons. Bottles containing them must be put away, and not allowed to stand with ordinary medicine bottles.

GENERAL DIRECTIONS.

When infectious disease has broken out in a house, the first thought should be to prevent its spread.

1. In an outbreak of Small-pox, all unvaccinated persons and children over 10 who have not been re-vaccinated, should forthwith be vaccinated.

2. Separate the sick, without delay, from the rest of the household; by removal to a Hospital where possible, or by complete isolation in separate house.

3. The room selected should be light and airy.

4. Give strict orders that no communication be held with the sick room except through the nurse, or some authorised person who has had the disease.

5. Examine house drains, and dust-bins, and any possible sources of nuisance; remedy defects and disinfect freely.

6. Look to sources of water-supply for impurities and contamination by sewage. Water which is clear, sparkling, and pleasant to the taste, may still be charged with sewer poison.

7. See "Water Test" (below)

8. Persons recovered from infectious disease should on no account be allowed to mix with their fellows until several disinfecting baths have been taken, and permission has been obtained from the medical attendant.

9. When sickness has come to an end, disinfect the room and all that has been in contact with the invalid.

10. The bodies of persons who have died of infectious disease should be carefully isolated and disinfected. They should be buried with the least possible delay.

WATER TEST FOR SEWAGE.

In "Home Counties" book, issued by "World's Work & Play" Dr. Dabbs give a simple test for impure water. "Take a clean white whisky bottle, boil and scald it well for 20 minutes. Get a clean new cork. Put the suspected water into the bottle, and add to it as much sifted white sugar as will go on a rupee heaped up. Cork well with new cork and put bottle on its side in the broad sun light for 4 to 6 days. If the contents of bottle turn milky, during that time, then the water is suspicious, and should be tested for sewage."

List of Articles to be Stocked

- IN -

DISPENSARY ON ESTATE (WARING.)

- 1 Set Apothecaries' Scales and Weights.
- 1 Pestle and Mortar (medium size)
- 2 Measure Glasses up to 6 ounces.
- 2 Minim Glasses.
- 1 Imperial pint (20 ounces) measure.
- 2 Glass Ear Syringes.
- 2 Glass Female Syringes.
- 1 Enema (Higginson)
- 1 Clinical Thermometer ($\frac{1}{2}$ minute)
- 2 Earthenware Slabs for mixing ointment, etc.
- 3 Spatulas; (Blunt Knives for mixing on above.)
- 1 Fine Nutmeg Grater.
- 1 Lancet in case.
- 3 Yards Diachylon Plaster.
- 3 Yards Antiseptic Lint.
- 12 Bandages.
- 1 Box Safety Pins.

N. B.—Clean fresh drinking water must be at hand to make up the mixtures with.

See also list of English Drugs and list of Native Plants.

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Investigator.	Organism.	Carbolic acid Co-efficient.
1. Prof. Simpson & Hewlett...	B. pestis ..	34.0
2. Dr. David Sommerville ...	B. cholerae (Koch)	32.3
3. Prof. Wm. Smith & Dr. David Sommerville.	B. diphtheriae ...	20.0
4. Prof. Klein, F.R.S. ...	B. tuberculosis ..	11.0
5. J. T. Ainslie Walker, F.C.S.	B. typhosus ...	15.0
6. Dr. David Sommerville ...	B. dysenteriae (Flexner)	10.0
		6—122.3
Average Co-efficient ...		20.38

Thus 1 gallon "Cyllin" is equal in disinfectant value to over 20 gallons pure carbolic acid at one-tenth the cost in use.

(Carbolic co-efficient is a term that expresses the number of times stronger than carbolic acid the disinfectant under review is.)

E. B. CREASY,
COLOMBO, CEYLON.

AGENT.

Please let me send you further particulars.

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